

A Question of Avulsive vs. Accretive Action in the Creation of Uplands

Prepared and Presented
by
Frank A. Hardt
Bureau of Land Management
Alaska State Office
Anchorage, Alaska

Abstract

The State of Alaska filed a protest of the survey of Township 17 South, Range 5 West, Copper River Meridian (C.R.M.), Alaska, on April 7, 1992. This paper discusses the survey and apportionment of lands abutting original meanders in Township 17 South, Range 5 West, C.R.M., Alaska, the protest of this survey by the State of Alaska and subsequent investigations into the circumstances and facts involved.

Introduction

The State of Alaska notified the Bureau of Land Management on April 7, 1992, that portions of the survey of Township 17 South, Range 5 West and Township 18 South, Range 8 West, C.R.M., Alaska, were technically incorrect. The notice also served as a protest of these surveys. The plat of Township 17 South, Range 5 West, C.R.M., refers to the partition of accreted lands and establishment of the medial line of relicted lands. The plat of Township 18 South, Range 8 West, C.R.M., refers to the partition of accreted lands. The State contended that these lands were former tidelands exposed by the geologic forces relative to the Good Friday Earthquake of March 27, 1964.

The scope of this investigation included only those lands within Township 17 South, Range 5 West, C.R.M., Alaska (see Attachments 1 and 2).

I was assigned to investigate the State's "protest" on June 21, 1992. The focus quickly expanded into several fronts. These were:

- 1) the question of title to the exposed land

- 2) the definition of terms and physical actions involved in creation of the subject lands
- 3) the nature of the forces acting to affect the exposure of these lands
- 4) the processes and documentation within the Bureau which led to the original survey decisions
- 5) an independent investigation to gather additional facts
- 6) the correlation and synthesis of the first five elements into a solution acceptable to all parties within the law and within the regulations of the Bureau

Encompassing these elements was Congressional legislation, case law, requirements of the Manual of Instructions for the Survey of the Public Lands of the United States, 1973 (Manual) and decisions of the Interior Board of Land Appeals (IBLA).

The Legal Question and Definitions

Some background and understanding of the legal principles and definitions involved is necessary in any survey investigation. The next several pages outline the topics involved in this case.

For more than one hundred fifty years, the United States Supreme Court has viewed title to lands underlying navigable waters as an incident of state sovereignty vested in the original thirteen states as direct successors to the English crown. The states subsequently admitted to the Union were on an "equal footing" with respect to sovereignty. Because of the importance of such lands for the purposes of trade and travel, the underlying rationale was that the public's right to use the lands for trade, travel, and fishing are not impaired.¹

The U.S. Supreme Court's first confirmation of English common law in relation to title of submerged lands was issued in 1842.² The "Equal Footing" doctrine was affirmed by the U.S. Supreme Court in 1845.³ Alaska statehood was approved by Congress on January 3, 1959.⁴ As a

¹Of Equal Footing: A Historical Perspective on Title Navigability,
G. Thomas Koester

²Martin v. Waddell, 41 U.S. (16 Pet.) 367 (1842)

³Pollard's Lessee v. Hagan, 44 U.S. (3 How.) 212 (1845)

⁴PL 86-508 (72 Stat. 339) as amended

result, all tidelands and submerged lands beneath navigable waters not specifically withdrawn prior to Statehood were vested in the State.

The IBLA has recognized and affirmed the "Equal Footing" doctrine. Furthermore, IBLA affirmed that the 1964 earthquake was an avulsive act. In Lough and Blackburn, IBLA opined that "submerged and filled tidelands passed to the State of Alaska on the date of its admission to the Union... Ownership of tidelands subsequently created by avulsive action remains in those persons or entities, who held title to the land prior to the avulsive event." (25 IBLA 96).¹ This ruling is in regard to the inverse case discussed here; uplands were affected by crustal subsidence as a result of the 1964 earthquake then subsequently filled and claimed as uplands by the appellant, Blackburn. IBLA opined, in part, as follows:

"We think it is 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, and the State's ownership would not extend to such lands. The survey should be conducted with this principle in mind."

In Blackburn, the IBLA cited State of Utah v. United States, 403 U.S. 9, 11 (1971) and Pollard's Lessee v. Hagan, 15 U.S. (3 How,) 391,392, 406-07 (1845). These are landmark cases in the field of riparian rights and boundary law.

The State has asserted its right to claim tidelands under the "Equal Footing" doctrine with corroboration from IBLA in regard to lands affected by tectonic subsidence as a result of the 1964 earthquake. To date, this assertion has been based on the principle of avulsion.

Avulsion has been defined by the courts as well as several other accepted reference documents, as follows:

A sudden and perceptible loss or addition to land by the action of water, or a sudden change in the bed or course of a stream. The removal of a considerable quantity of soil from the land of one man, and its deposit upon or annexation to the land of another, suddenly and by the perceptible action of water.²

¹Sandra L. Lough, Damon M. Blackburn, IBLA 75-614 & 76-93

²Black's Law Dictionary, Fifth Edition, West Publishing Co., 1979

Avulsion is 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. An island may result or the avulsed land may become attached to the opposite shore.¹

A river's sudden change in flow alignment out from its previous left and right banks to a new channel, leaving an identifiable upland area between the abandoned channel and the new channel.²

These definitions are consistent with case law. Case law concerning avulsion is heavily weighted on the "boundary stream" and "effect of water" as determining factors.³

A single case, Schwartzstein,⁴ deals with storm action on littoral boundaries and defines riparian rights in terms of avulsion:

"where lands bordering on the shore were lost, not by gradual or imperceptible encroachment of the sea on the land, but by reason of avulsion, sudden or violent action of the elements, perceptible while in progress, the loss did not change the boundaries, nor did the owner lose his title, where the extent and quantity of his land was apparent, and he could not endeavor as best he might to protect or reclaim his property."

Clearly, case law supports a definition of avulsion as an action based upon the effects of flow patterns of boundary streams or rivers, resulting in an immediate and perceptible change in the character of the boundaries of land, subject to statute and case law. Presuming that avulsion is identical with the geologic forces affecting changes in the character of tidelands and uplands in this investigation is contradictory to case law, with the exception of Schwartzstein.

Following the 1964 earthquake, the Commissioner, Department of Natural Resources, State of Alaska, requested that the State Attorney General issue an opinion on the ownership of shoreline property enlarged or reduced, gradually or suddenly, by the earthquake of March 27, 1964, and its after-effects. Warren C. Colver opined, in part, as follows:⁵

¹Manual, 7-71

²BLM Glossary of Surveying and Mapping Terms

³See Words and Phrases, Permanent Ed. 4A, pgs. 725-730, West Publishing Co., 1969

⁴Schwartzstein et al v. B.B. Bathing Park, Inc., et al., 197 N.Y. Supp. 490, 492 (1922)

⁵1964 Opinion of the Attorney General No. 6, issued September 14, 1964

The means by which the change in shoreline occurs has significant legal consequences. If the location of the boundary of a tract of land at the mean high tide line is gradually and imperceptibly changed by accretion, erosion, or prolonged reliction, the margin of a tract at mean high tide, as so changed, remains the boundary. "Where ... a boundary bank is changed by these processes, {accretion and erosion} the boundary, whether public or private, follows the change."¹ Lands eroded from a tract which, as a result, are below mean high tide are thereby revested in the State.²

On the contrary, if a tract undergoes sudden or violent change by reliction or avulsion, its boundaries remain the same and no change in ownership occurs.

"When land bordering a body of water is increased by accretion, ... the new land thus formed belongs to the owner of the upland to which it attaches ... [Where] land [is] ... lost by erosion, [it] returns to the ownership of the State. This is not the rule where the loss of the land occurs by avulsion, ... the effect or extent of which is perceptible while it is in progress. In such cases, the boundaries do not change."³

In land precipitously lowered by the earthquake, the upland owner would have title out to the old high-water mark, regardless of the fact that the tract may now be partially submerged; if the owner previously owned tidelands, he would still own the land out to his old low-water mark boundary. The character of the body of water as tidal, non-tidal, navigable or non-navigable is immaterial as respects the application of the rules relating to sudden reliction and avulsion. The rules governing

¹ Oklahoma v. Texas, 268 U.S. 252, 45 S.Ct. 497, 60 L.ed. 937, 943 (1925)

² AS 44.03.020

³ Arkansas v. Tennessee, 246 U.S. 158, 38 S.Ct. 301, 62 L.ed. 638, 647 (1918)

changes of boundaries of tidelands and uplands are equally applicable to the State and to private persons.¹

When land shifts occur by earthquake-generated avulsion, then, the elements of suddenness creates a situation where no change occurs in the limits of State boundaries or private tracts; the old State and private boundaries, submerged or otherwise, survive.²

Briefly, then, these are the answers to your specific questions:

- (a) Boundaries follow accretion and erosion because the change is gradual; boundaries do not change where land displacement occurs suddenly, as through avulsion or some kinds of reliction.
- (b) State ownership of tidelands is measured by the old boundaries where sudden earthquake displacement has occurred.³
- (c) Yes, the boundaries of tidelands set by pre-earthquake survey are fixed. See (a) and (b).
- (d) 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 previously established boundaries to recognize.

These last two points are cogent and support the Bureau's position in relationship to avulsive changes in riparian boundaries. It is hard to argue that formerly identified tidelands (or any lands, for that matter), suddenly and perceptibly uplifted or submerged by earthquake generated crustal deformation, do not fall into a category wherein results of such action would be governed by the legal principles of avulsion.

¹ Waynor v. Diboff, 9 Alaska 230, 232 (1937)

² Louisiana v. Mississippi, 282 U.S. 458, 465, S.Ct. 197 (1931)

³ However, boundaries may be changed by State action and Congressional assent. Then, of course, the new mean high tide mark could be used to ascertain the extent of tidelands ownership. U.S. v. Louisiana, 363 U.S. 1, 8-9 (1960). c.f.: 43 U.S.C.A. 1311: Ownership of Submerged Lands

In the case at hand, Bureau employees attempted to determine if the lands in question were indeed suddenly and perceptibly changed forever as a result of tectonic uplift or subsidence or whether the changes were the result of gradual reliction and/or accretion. Let's begin the examination of what has occurred by briefly citing the history of surveys in the area.

History of Surveys

The southerly shore of Boswell Bay was parceled out by means of Homestead Entry Surveys, Homesite Surveys and special U.S. Surveys from 1930 to 1951. (see Attachment No. 3) Of the eleven parcels, 8 were patented from 1930 to 1975. Only one of these was patented after 1951; all other patents predated Statehood and the 1964 earthquake. In addition to these surveys, a platted right-of-way exists between U.S. Surveys No. 2622 and 2679. Two unsurveyed parcels also exist and ties were made between adjacent meander corners.

The rectangular survey of Township 17 South, Range 5 West, C.R.M., Alaska, was commenced on July 1, 1989, under Special Instructions for Group No. 483, Alaska. The plats were approved on September 30, 1991 and officially filed on October 24, 1991.

The Investigation

The original notice of protest filed on April 7, 1992, contained no statement of reasons in support of the State's position. A review of additional correspondence between the State of Alaska and the Bureau of Land Management does not prove any more conclusive. The Bureau provided the State with guidance on the requirements, format and timing of protests and appeals to no avail.¹

The Deputy State Director for Cadastral Survey was uncomfortable with the survey as approved and instructed me to proceed with my investigation. We decided to use this case as an educational tool for our own surveyors, for anyone wishing to know more about protests and appeals, and as a reminder to all surveyors of the importance of documentation of survey decisions.

My initial step in the investigation was to obtain copies of the approved plats and notes, Master Title Plats, Historical Indices, Patents and the survey files for the protested townships. There was very little supporting documentation available from these sources. What follows is a brief

¹43 CFR 4.450

synopsis of information available from the Group Survey file and the Contract file.

During the execution of the rectangular survey, the contractor and BLM Project Inspectors became aware of approximately 20 chains of previously unsurveyed land fronting the original H.E.S., H.S. and U.S. Surveys on the southerly shore of Boswell Bay. This land is seaward of the original meanders. On or about July 25, 1989, the survey contractor submitted a list of 5 questions to the BLM Project Inspectors for resolution and guidance. Presented along with the questions was a sketch plat for reference. No mention of avulsion was made at this time. The five questions were:

1. Is this accretion or reliction? I do not know.
2. If accretion what about the 75' high rock?
3. If accretion does the ROW (platted) get a proportional amount or hold the record width? Do we extend the ROW or come 90° from present MHT line?
4. If reliction do we fix the meanders at the record positions and make them a fixed and limited boundary and monument them?
5. Are lots C & D S2765 & Tract B S2679 Forest Service?

On July 27, 1989, the Project Inspectors and the survey contractor traveled to Boswell Bay to interview long-time resident, Ralph E. Renner. Following their discussion, an affidavit was prepared, signed and witnessed. The affidavit clearly resolved the issue of reliction easterly of H.E.S. 206. Mr. Renner states "the arm of Boswell Bay as depicted on the survey plat East of U.S. Survey No. 1870 has been land since my arrival in 1936." BLM's position on the apportionment of this land as relictid tidelands is proper and will not be discussed further.

The second area of concern, the uplift of former tidelands, is less conclusive. Mr. Renner states "the earthquake caused an uplift in ground movement. Since the earthquake there has been a small amount of accretion every year. Over the years I believe the Copper River delta has had some impact on the accretion in this area."

On August 1, 1989, a meeting was held at the Alaska State Office where these issues were discussed and decisions rendered. No record of this meeting was ever filed in the Group Survey File or the Contract File. There is no written record of a response to the five questions posed by the contractor, nor is there any evidence that avulsion was discussed.

The only record of the final decision was a brief item in a subsequent "Instruction to Contractor," dated September 5, 1989:

"7.) Boswell Bay will be surveyed and monumented according to Attachments B-2, 3, & 4. These corner diagrams have been approved by" the Chief, Branch of Special Instructions and the Project Inspector.

The final outcome of these meetings and discussions was to survey the lands in front of the original inholdings as accretions and proportion them accordingly. A 75 foot high rock in place was surveyed as upland.

I contacted the lead photointerpreter for this Group survey in our Branch of Mapping Sciences on June 23, 1992. We discussed her recollection of the events leading to the final decision and I obtained a copy of her field report prepared as the lead photointerpreter for this project. Additionally, she provided me with a portion of a technical paper researched and prepared by Mr. George Plafker, a U.S.G.S. scientist.¹ Mr. Plafker is an acknowledged expert in the field of tectonics and earthquake study. The Plafker report clearly showed that tectonic deformation and vertical displacement took place throughout south-central Alaska and the Prince William Sound as a direct result of the Good Friday Earthquake. The positive (upward) vertical displacement in the vicinity of Hinchinbrook Island (Boswell Bay) ranged from 3.30 feet to 5.48 feet. This information did not appear to be used in any way during the final decision phase although it clearly supports the sudden uplift scenario proposed by the State.

Additionally, the lead photointerpreter stated that part of the decision process apparently involved the theory that "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."² Again, the Renner affidavit was unclear in delineating between accretion and avulsion.

On June 25th I checked with the NOAA office in Anchorage to determine what, if any, information might be available from a charting perspective. Little information of use was immediately available. We could obtain historical nautical charts (pre-quake) as a frame of reference, but the

¹The Alaska Earthquake, March 27, 1964, Regional Effects,
U.S. Geological Survey Professional Paper 543-1, 1969

²Manual, 7-73

expense of obtaining such a chart outweighed the benefits at the time. The charts are available at the National Archives in Washington, D.C.

I talked to Ms. Joan Rikon at the Nautical Charting Division of NOS/NOAA in Rockville, Maryland, to request pre- and post-quake photography. She informed me that photo missions were flown in the area within days of the earthquake. NOS/NOAA was very interested in updating their charts to reflect post-quake changes. She said she would research the files and send me an abstract of available photography.

I called information in Cordova, Alaska, to attempt to locate Mr. Renner who provided the original affidavit regarding Boswell Bay. I eventually traced Mr. Renner to Bothel, Washington, and got his phone number from Seattle information. I called him and asked if I could meet personally to clarify his earlier statements. He agreed and at that time told me that there was definitely newly created land (uplifted tidelands) as a result of the earthquake.

On June 30, I officially suspended the plats of T. 17 S., R. 5 W. and T. 18 S., R. 8 W., C.R.M. This had not been done upon receipt of the initial letter from the State of Alaska.

During the week of July 6, I met with Bureau personnel at the Idaho State Office in Boise to discuss the proper course of action to pursue relative to correcting what was emerging as an indefensible position in regard to the 1989 surveys. The consensus opinion was to do an investigative resurvey and subsequent corrective resurvey of possible accretions and the uplifted tidelands. There was concern expressed during these meetings that the State of Alaska was not asserting their rights to a full and equitable claim against the Federal Government for all such uplifted areas regardless of the existence of a prior survey.¹

I met with Mr. Ralph Renner, his wife, Lucille, and his daughter-in-law, Vickie, at the Renner home in Bothel, Washington, on July 12, 1992. Mr. Renner provided enough information to warrant creating a second affidavit. This second document clarified the issues of accretion and avulsion. Mr. Renner estimated that there was approximately 75 feet of accretion in front of his parcel prior to the earthquake and that a sudden uplift did occur as a result of the earthquake.

Mr. Renner also affirmed his original statement concerning the dry arm of Boswell Bay easterly of H.E.S. No. 206 (U.S. Survey No. 1870). The

¹Supra, note 5

Bureau's position in regard to the apportionment of this land is correctly depicted as reliction. No further action is necessary.

On July 14th I called the Oregon State Office to talk to the former Chief of one of the Alaska State Office's Review Sections to ascertain his recollection of discussions which led to the Bureau's original decisions. He was a Section Chief in the Branch of Examination and Records (AK-922) during the initial stages of the 1989 survey. He stated that no one could provide conclusive proof of avulsion and cited section 7-73 of the Manual as the rationale for treating the uplifted land as accretion.

On July 27th I received the abstract of available NOS/NOAA photography from Washington, D.C. On July 30th I ordered negatives of selected photos from the post-quake flight lines over Boswell Bay.

I traveled to Cordova, Alaska, on August 18th to do some background research, interview local residents and to visit Boswell Bay for a first hand observation. The eruption of Mt. Spur later that evening precluded a flight to Boswell Bay. However, I established some new leads and talked to several local residents. The most helpful of these were Mr. & Mrs. Richard Borer, owners of The Reluctant Fisherman Inn. Mr. Borer is very knowledgeable about local residents and provided me with names and phone numbers of several new contacts.

Ms. Brook Adkinson of the public library stated that "after the 'quake, the tide just didn't come up as far (on the shoreline) as it had before the 'quake." Mr. Ralph Renner (son of the senior Ralph Renner) stated that to the best of his recollection the current alder line at Boswell Bay closely reflects the mean high tide line prior to the earthquake. Several other casual contacts in Cordova confirmed the dramatic change in the tidal range after the earthquake.

The most conclusive evidence of the sudden and perceptible nature of the uplift is from Mrs. Earl (Becky) McCall of Alpine, Texas, an avid amateur photographer. I contacted her at the suggestion of Mr. Borer. In her letter dated September 12, 1992, she says "when we realized what had happened (the obvious uplift) I made a point of taking pictures from the same points, and at the same height of the tide, as pictures I had in my files." No one anticipating the events of March 27, 1964, could have been more insightful.

During a phone conversation on September 25, Mrs. McCall stated that a rock seawall had been constructed in front of H.S. 50 and logs had been hauled in by another owner to prevent further tidal erosion. Mrs. McCall also mentioned a U.S. Forest Service plat showing a road in front of the

lots as usable only at lower tide levels. I contacted the Chugach National Forest engineers in Anchorage for help in locating this plat. The plat is dated 1938 and can be found at page 40, Residence Site Group Plans.

The following discussion is taken from a letter written by Mrs. McCall dated September 25.

On 3/27/64 my husband and I were living at the F.A.A. site, approx. a mile inland from Boswell Bay. The next morning, 3/28/64, we heard an eye-witness account from Jerry Olsen, who owned H.S. 90 on the Bay. All night long Jerry and 2 companions had listened to radio reports from radio station KLAM in Cordova, while they watched the tidal action in Boswell Bay. Normal tides are the same in Cordova Harbor as the Bay. That night the radio reported high water in the city harbor, while the Bay would be totally dry. The reverse was also true, indicating the way the water was slopping back and forth. Jerry also said that the tidal waves DID NOT REACH THE LEVEL OF PREVIOUS BIG STORMS. Previous storm tidal action had washed out flower beds around H.S. 57 ... and wave action was steadily eroding the bluff on H.S. 245 (west end of row of residences) to the point the cabin was in danger.

When the tidal action finally settled down to "normal" the water line was well below the pre-quake level and the residents had a real problem with access, as they could no longer come to their doorsteps via boat.

Also - there is no doubt that if the land had not risen, the cabins on the Bay would have been destroyed by the tidal action after the quake.

Photos obtained from NOS/NOAA on September 1, 1992, were, unfortunately, taken at low tide and do not offer any evidence of the uplift, one way or the other. However, Mrs. McCall's photos, while not conclusive, do show the change in the tide levels. I received the McCall slides and a letter on October 7, 1992.

I contacted Mr. Richard Borer who gave me Mr. Olsen's address and phone number in Bend, Oregon. I sent copies of plats and my draft research log to Mr. Olsen on October 26, 1992, so he would be familiar with the project and what I was looking for. I did not get a reply from

him. On December 9, I sent a duplicate copy via return receipt mail. I received the return notice just prior to the Christmas holidays. I phoned Mr. Olsen on January 13, 1993, and talked at length about the earthquake and its after effects. An affidavit is in route. He related that the earthquake rattled some dishes and made the trees sway but not much else. When they looked out at the bay much of the water was gone. As the water returned accompanied by violent wave action, and three foot bore tides, he noted that the level of the tide was far below normal. Had the tide returned to its previous height, Mr. Olsen feared that his cabin would have been lost due to the violent action of the water. As the tide calmed it was obvious that the land had risen. He stated that the meanderline depicted on the 1989 survey plats closely represents the newly created tide line of 1964. Approximately 20 chains of new frontage had been created violently and perceptibly. This was the evidence I had been after for seven months - an eyewitness account!

Conclusions

This investigation clearly shows that accretion, erosion and tectonic uplift influenced the shoreline as surveyed in 1989. The extent of erosion and accretion prior to the earthquake will be difficult to determine. The passage of time and continued effects of the elements pose a considerable challenge to the proper conclusion of this survey.

Following a review of this research by the Solicitor's office, I believe the Bureau will perform a field investigation and subsequent corrective resurvey to determine the extent of pre-earthquake erosion and accretion in front of the unpatented parcels. A replat showing the original meanderline and possible partitions of accretions in front of unpatented lands will be prepared.

What can we learn from this example? First, initial research may be time consuming - this investigation took seven months. Working full time under a deadline, I could possibly have concluded the entire effort in one month, certainly during the field season. There is no substitute for research. What we do as surveyors affect personal property rights; we have a duty to protect the bona fide rights of the public and entrymen.

Second, documentation is paramount in all survey projects, especially where the decisions are complicated and more than one interpretation can be made from the evidence.

Third, a protest of a survey is more than a mere disagreement. A protest involves research, logical conclusions and presentation of the evidence to support a contradictory position.

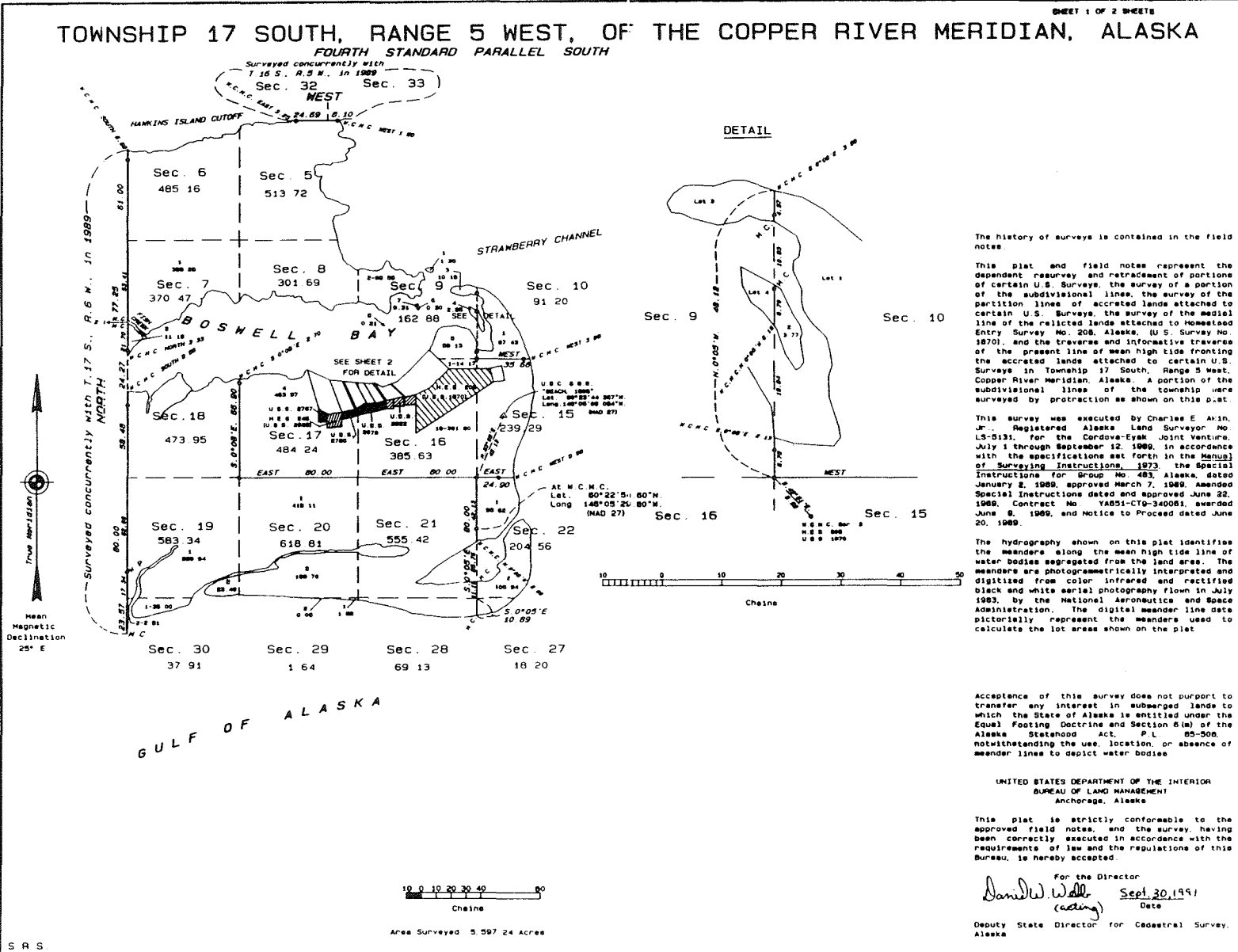
This investigation does not answer the larger legal question of ownership of other tidal areas affected by these same tectonic events. Does the presence or absence of an approved survey affect the title to such lands? Does the State own all such uplifted lands? Have all riparian rights of upland owners been extinguished by the "bathtub ring" effect? These questions will undoubtedly remain unanswered for some time to come.

TOWNSHIP 17 SOUTH, RANGE 5 WEST, OF THE COPPER RIVER MERIDIAN, ALASKA

FOURTH STANDARD PARALLEL SOUTH

Surveyed concurrently with
 T. 16 S., R. 5 W., in 1989

Sec. 32 WEST Sec. 33



The history of surveys is contained in the field notes.

This plat and field notes represent the dependent resurvey and retracement of portions of certain U.S. Surveys, the survey of a portion of the subdivisional lines, the survey of the partition lines of accreted lands attached to certain U.S. Surveys, the survey of the medial line of the relicited lands attached to Homestead Entry Survey No. 208, Alaska, (U.S. Survey No. 1870), and the traverse and informative traverse of the present line of mean high tide fronting the accreted lands attached to certain U.S. Surveys in Township 17 South, Range 5 West, Copper River Meridian, Alaska. A portion of the subdivisional lines of the township were surveyed by protraction as shown on this plat.

This survey was executed by Charles E. Akin, Jr., Registered Alaska Land Surveyor No. LS-5131, for the Cordova-Eyak Joint Venture, July 1 through September 12, 1989, in accordance with the specifications set forth in the Manual of Surveying Instructions, 1973, the Special Instructions for Group No. 483, Alaska, dated January 2, 1989, approved March 7, 1989, amended Special Instructions dated and approved June 22, 1989, Contract No. YA851-CY0-340061, awarded June 9, 1989, and Notice to Proceed dated June 20, 1989.

The hydrography shown on this plat identifies the meanders along the mean high tide line of water bodies segregated from the land area. The meanders are photogrammetrically interpreted and digitized from color infrared and rectified black and white aerial photography flown in July 1983, by the National Aeronautics and Space Administration. The digital meander line data pictorially represent the meanders used to calculate the lot areas shown on the plat.

Acceptance of this survey does not purport to transfer any interest in submerged lands to which the State of Alaska is entitled under the Equal Footing Doctrine and Section 6(a) of the Alaska Statehood Act, P.L. 85-508, notwithstanding the use, location, or absence of meander lines to depict water bodies.

UNITED STATES DEPARTMENT OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT
 Anchorage, Alaska

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted.

For the Director
 Daniel W. Wall Sept 30, 1991
 (acting) Date
 Deputy State Director for Cadastral Survey,
 Alaska

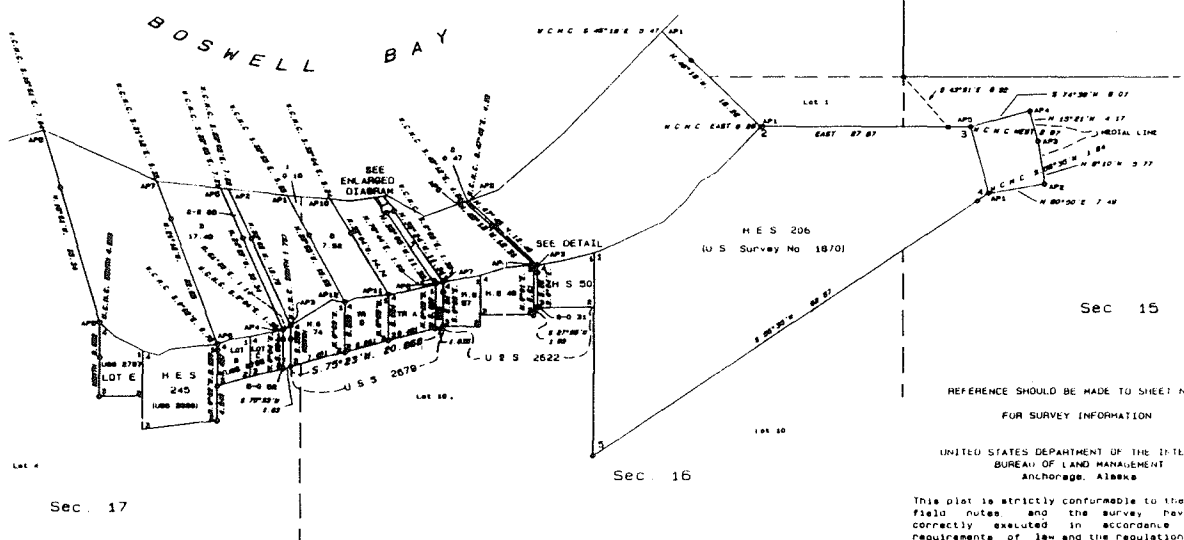
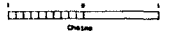
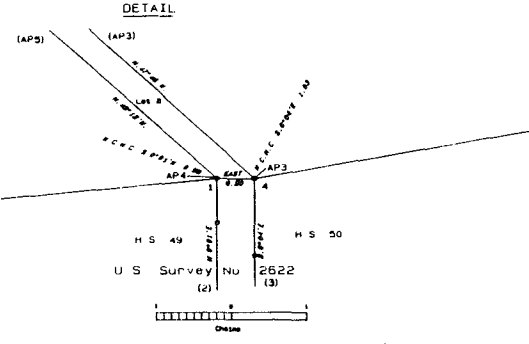
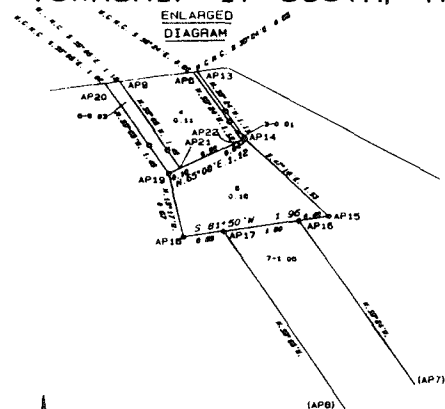
Attachment No. 1

SUSPENDED JULY 1, 1992
FILE GROUP 483, AK- 9611.4 (922)

Officially Filed ORIGINAL
DATE OCTOBER 24, 1991

SHEET 2 OF 2 SHEETS

TOWNSHIP 17 SOUTH, RANGE 5 WEST, OF THE COPPER RIVER MERIDIAN, ALASKA



REFERENCE SHOULD BE MADE TO SHEET NO. 1 FOR SURVEY INFORMATION

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Anchorage, Alaska

This plot is strictly conformable to the approved field notes and the survey having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted.

For the Director
David W. Webb (acting) Sept 30, 1991
Date

Deputy State Director for Cadastral Survey Alaska

S R S

Attachment No. 2

History of Surveys: Original Inholdings

HES 206 (USS 1870)

Surveyed October 30, 1928

Patented July 11, 1930 No. 1038718

HES 245 (USS 2628)

Surveyed January 4, 1946

Patented November 26, 1956 No. 1166813

Homesite 49 (USS 2622)

Surveyed January 25, 1946

Patented December 13, 1949 No. 1127871

Homesite 50 (USS 2622)

Surveyed January 25, 1946

Patented July 14, 1949 No. 1126695

Homesite 57 (USS 2622)

Surveyed January 25, 1946

Patented October 5, 1962 No. 1228936

USS 2767, Lot E

Surveyed July 23, 1951

Patented August 24, 1955 No. 1153793

Homesite 74 (USS 2679)

Surveyed July 23, 1951

Patented January 1, 1955 No. 1149173

USS 2679, Tract A

Surveyed July 23, 1951

Patented April 4, 1975 No. 50-75-0175

USS 2679, Tract B

Surveyed July 23, 1951

Unpatented

USS 2765, Lots C & D

Surveyed June 13, 1947

Unpatented