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EVALUATION OF COAL RESOURCES ON ALASKAN MENTAL HEALTH
AND DESIGNATED POOL LANDS

By

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INTRODUCTION.....	1
EXHIBIT A: STATEWIDE BREAKDOWN FOR QUADRANGLES WITH MENTAL HEALTH & POOL LANDS.....	2
CRITERIA USED FOR THE EVALUATION OF COAL RESOURCES ON MENTAL HEALTH & POOL LANDS.....	3-4
COAL-POTENTIAL CLASSIFICATIONS BY QUADRANGLE.....	5-10
REFERENCES.....	11-13
DEFINITIONS.....	14
LEGEND.....	15
QUADRANGLES (1:63,360).....	16-70
ANCHORAGE B-8.....	16
ANCHORAGE C-4.....	17
ANCHORAGE C-5.....	18
ANCHORAGE C-6.....	19
ANCHORAGE C-7.....	20
ANCHORAGE C-8.....	21
ANCHORAGE D-2.....	22
ANCHORAGE D-3.....	23
ANCHORAGE D-4.....	24
ANCHORAGE D-5.....	25
ANCHORAGE D-6.....	26
FAIRBANKS A-3.....	27
FAIRBANKS A-4.....	28
GULKANA A-6.....	29
GULKANA B-6.....	30
GULKANA C-6.....	31
HEALY D-4.....	32
HEALY D-5.....	33
KENAI A-4.....	34
KENAI A-5.....	35
KENAI B-4.....	36
KENAI B-6.....	37
KENAI D-5.....	38
KENAI D-6.....	39
PORT MOLLER D-2.....	40
PORT MOLLER D-3.....	41
SELDOVIA C-4.....	42
SELDOVIA C-5.....	43
SELDOVIA D-3.....	44
SELDOVIA D-4.....	45
SELDOVIA D-5.....	46
TALKEETNA B-1.....	47
TALKEETNA C-1.....	48
TALKEETNA C-2.....	49
TALKEETNA D-1.....	50
TALKEETNA MOUNTAINS A-1.....	51
TALKEETNA MOUNTAINS A-2.....	52
TALKEETNA MOUNTAINS B-1.....	53
TALKEETNA MOUNTAINS B-2.....	54
TALKEETNA MOUNTAINS C-6.....	55
TALKEETNA MOUNTAINS D-3.....	56
TALKEETNA MOUNTAINS D-6.....	57
TYONEK A-1.....	58
TYONEK A-2.....	59
TYONEK A-3.....	60
TYONEK A-4.....	61
TYONEK A-5.....	62
TYONEK A-6.....	63
TYONEK B-1.....	64
TYONEK B-2.....	65
TYONEK B-3.....	66
TYONEK B-4.....	67
TYONEK B-5.....	68
TYONEK C-1.....	69
TYONEK D-1.....	70

EVALUATION OF COAL RESOURCES ON ALASKAN MENTAL HEALTH AND DESIGNATED POOL LANDS

INTRODUCTION

THIS REPORT SUMMARIZES THE COAL RESOURCES ON ALASKAN MENTAL HEALTH AND DESIGNATED POOL LANDS. IT CONTAINS (1) A DESCRIPTION OF THE CRITERIA THAT WERE USED TO MAKE THE EVALUATIONS, INCLUDING DEFINITIONS; (2) 55 INCH-MILE (1:63,360) QUADRANGLES WITH COAL-POTENTIAL SCORINGS BY CLASS (I-V) AND DATA QUALITY (A-C); (3) A SUMMARY OF PERTINENT GEOLOGIC AND COAL RESOURCE INFORMATION ON EACH 1:63,360 QUADRANGLE; (4) A LEGEND EXPLAINING MAP SYMBOLS; AND (5) A SPECIFIC LIST OF REFERENCES FOR THOSE 1:250,000 QUADRANGLES WITH MENTAL HEALTH OR DESIGNATED POOL LANDS HOLDING COAL POTENTIAL AND FOR WHICH SITE-SPECIFIC COAL-RESOURCE AND POINT-SOURCE COAL DATA WERE OBTAINED (EXHIBIT A).

AREAS WITH COAL-POTENTIAL SCORINGS OF V (VERY HIGH POTENTIAL) AND IV (HIGH POTENTIAL) ARE CONSIDERABLY MORE IMPORTANT THAN THOSE LANDS CLASSIFIED III (MODERATE POTENTIAL) OR LOWER. DETAILED COAL-POTENTIAL SCORINGS WERE MADE ONLY ON THOSE INCH-MILE QUADRANGLES WITH CLASS II (LOW POTENTIAL) COAL LAND OR ABOVE. THOSE INCH-MILE QUADRANGLES WITH MENTAL HEALTH OR POOL LANDS FOR WHICH NO DIFFERENTIATION IN COAL POTENTIAL COULD BE MADE AT CLASS II OR ABOVE SHOULD BE CONSIDERED TO BE CLASS I (VERY LOW POTENTIAL) IN THEIR ENTIRETY. NEEDLESS TO SAY, THE MAJORITY OF ALASKAN MENTAL HEALTH AND DESIGNATED POOL LANDS ARE CLASS I COAL LAND.

RESOURCE-CALCULATIONS SHOULD ONLY BE CONSIDERED WHEN ASSIGNING MONETARY VALUES TO GIVEN PARCELS. ESTIMATED RANGES IN COAL RESOURCES WERE COMPUTED ONLY ON VERY HIGH POTENTIAL (CLASS V) COAL LANDS AND ARE LISTED ON THE INCH-MILE MAPS. THEY HAVE BEEN CALCULATED AT THREE LEVELS OR DEGREES OF GEOLOGIC ASSURANCE: (1) THE MEASURED-RESOURCE CATEGORY HAS A RELATIVE HIGH DEGREE OF GEOLOGIC ASSURANCE; (2) THE INDICATED-RESOURCE CATEGORY HOLDS A MODERATE DEGREE OF GEOLOGIC ASSURANCE; AND (3) THE INFERRED-RESOURCE CATEGORY HOLDS A LOW DEGREE OF GEOLOGIC ASSURANCE.

OF THE ORIGINAL 47 1:250,000-SCALE QUADRANGLES CONTAINING MENTAL HEALTH OR DESIGNATED POOL LANDS THAT WERE EVALUATED 18 QUADRANGLES HAVE NO KNOWN COAL RESOURCES. HENCE, THESE WERE INITIALLY CULLED AND AUTOMATICALLY RATED IN THEIR ENTIRETY AS CLASS I COAL LAND OF VERY LOW POTENTIAL. THEY ARE:

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|-----------------|----------------------|----------------------|
| 1. AFOGNAK | 7. GOODNEWS BAY | 13. SEWARD |
| 2. ATLIN | 8. HAGEMASTER ISLAND | 14. SKAGWAY |
| 3. BIG DELTA | 9. LIAMNA | 15. SUMDUM |
| 4. BLYING SOUND | 10. KANTISHNA RIVER | 16. TAKU RIVER |
| 5. DILLINGHAM | 11. KETCHIKAN | 17. TAYLOR MOUNTAINS |
| 6. FORT YUKON | 12. MT. KATMAT | 18. VALDEZ |

ALTHOUGH THE REMAINING 29 QUADRANGLES ARE KNOWN TO CONTAIN COAL RESOURCES, PRELIMINARY EVALUATIONS SHOWED THAT 19 OF THESE EITHER HAD COAL RESOURCES OUTSIDE OF MENTAL-HEALTH OR DESIGNATED POOL-LAND AREAS, OR HAD COAL RESOURCES TOO DEEP TO BE CONSIDERED EVEN marginally ECONOMIC AT THIS TIME. THESE QUADRANGLES ARE:

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|--------------------|---------------------|--------------------|
| 19. BERING GLACIER | 26. JUNEAU | 32. PETERSBURG |
| 20. BETHEL | 27. LIVENGOOD | 33. PORT ALEXANDER |
| 21. BRISTOL BAY | 28. MT. FAIRWEATHER | 34. SITKA |
| 22. CHIGNIK | 29. MT. HAYES | 35. TANACROSS |
| 23. CIRCLE | 30. MT. MCKINLEY | 36. TANANA |
| 24. CORDOVA | 31. NAKNEK | 37. UGASHIK |
| 25. CRAIG | | |

THE REMAINING 10 1:250,000 QUADRANGLES CONTAIN MENTAL-HEALTH AND DESIGNATED POOL-LAND AREAS THAT REQUIRED DETAILED ASSESSMENTS OF COAL POTENTIAL. THESE QUADRANGLES ARE:

- | | | |
|---------------|-----------------|-------------------------|
| 38. ANCHORAGE | 42. KENAI | 45. TALKEETNA |
| 39. FAIRBANKS | 43. PORT MOLLER | 46. TALKEETNA MOUNTAINS |
| 40. SULKANA | 44. SELDOVIA | 47. TYONEK |
| 41. HEALY | | |
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CRITERIA USED FOR THE EVALUATION OF COAL
RESOURCES ON MENTAL HEALTH AND POOL LANDS

PART 1: CLASS

CLASS V COAL LAND: VERY HIGH POTENTIAL... ESTIMATED MORE THAN 90 PERCENT CHANCE OF LOCATING MINEABLE COAL RESOURCES. RESOURCES OF MINEABLE COAL ARE KNOWN OR ALMOST CERTAIN BASED ON DRILLING, DETAILED MAPPING, FIELD OBSERVATIONS, AND/OR OUTCROP MEASUREMENTS. TONNAGES OF POTENTIALLY MINEABLE COAL RESOURCES ARE ESTIMATED BASED ON LOW, MODERATE, AND HIGH DEGREES OF GEOLOGIC ASSURANCE IN ORDER TO BRACKET THE POSSIBLE RANGE OF RESOURCE MAGNITUDE, AS FOLLOWS;

· MEASURED RESOURCES---WITH A HIGH DEGREE OF GEOLOGIC ASSURANCE, THE AREA OF COAL RESOURCE IS WITHIN 1/4 MILE OF POINTS OF THICKNESS MEASUREMENT.

· INDICATED RESOURCES---WITH A MODERATE DEGREE OF GEOLOGIC ASSURANCE, THE AREA OF COAL RESOURCE IS EXTENDED 3/4 MILE FROM POINTS OF THICKNESS MEASUREMENT.

· INFERRED RESOURCES---WITH A LOW DEGREE OF GEOLOGIC ASSURANCE, THE AREA OF COAL RESOURCE IS EXTENDED 3 MILES FROM POINTS OF THICKNESS MEASUREMENT.

CLASS IV COAL LAND: HIGH POTENTIAL.....ESTIMATED 70-90 PERCENT CHANCE OF LOCATING MINEABLE COAL RESOURCES. RESOURCES OF MINEABLE COAL ARE VERY LIKELY BASED ON THE CONSERVATIVE PROJECTION OF THE CONTINUITY OF COAL-BEARING ROCK UNITS FROM ADJACENT LANDS.

CLASS III COAL LAND: MODERATE POTENTIAL...

ESTIMATED 30-70 PERCENT CHANCE OF LOCATING MINEABLE DEPOSITS OF COAL. RESOURCES OF MINEABLE COAL ARE LIKELY BASED ON THE REASONABLE INFERENCE OF THE CONTINUITY OF COAL-BEARING ROCK UNITS FROM SURROUNDING AREAS.

CLASS II COAL LAND: LOW POTENTIAL.....ESTIMATED 10-30 PERCENT CHANCE OF LOCATING MINEABLE COAL RESOURCES. RESOURCES OF MINEABLE COAL ARE UNLIKELY BASED ON THE DISTANT EXTRAPOLATION OF THE CONTINUITY OF COAL-BEARING ROCK UNITS FROM MORE REMOVED AREAS.

CLASS I COAL LAND: VERY LOW POTENTIAL... ESTIMATED 0-10 PERCENT CHANCE OF LOCATING MINEABLE COAL RESOURCES. RESOURCES OF MINEABLE COAL ARE KNOWN NOT TO BE PRESENT OR ARE VERY UNLIKELY BASED ON DRILLING, FIELD OBSERVATIONS, AND/OR OUTCROP MEASUREMENTS. IN MANY CASES, SURFACE FORMATIONS ARE RESTRICTED TO BASEMENT ROCK OR OTHER BARREN STRATA.

PART 2: DATA QUALITY MODIFIERS

(a) GOOD TO VERY GOOD DATA BASE, INCLUDING;

- DETAILED GEOLOGIC MAPPING
- DRILLING INFORMATION
- EXISTING COAL LEASES
- CURRENT OR PRIOR MINING
- EXTENSIVE COAL QUANTITY AND QUALITY DATA

(b) FAIR DATA BASE, INCLUDING;

- REGIONAL GEOLOGIC MAPPING
- SOME EXPLORATION AND COAL PROSPECTS
- FILED COAL-PROSPECTING PERMITS
- SOME FIELD DATA AND MEASUREMENTS
- SOME COAL QUANTITY AND QUALITY DATA

(c) POOR TO VERY POOR DATA BASE, INCLUDING;

- LITTLE TO NO GEOLOGIC MAPPING
- ALMOST NO EXPLORATION FOR COAL
- NO FILED COAL PROSPECTING PERMITS
- VERY LITTLE FIELD DATA AND MEASUREMENTS
- VERY LITTLE COAL QUANTITY AND QUALITY DATA

COAL-POTENTIAL CLASSIFICATIONS BY QUADRANGLE

ANCHORAGE QUADRANGLE

MENTAL HEALTH AND DESIGNATED POOL LANDS ARE WIDESPREAD IN THE MATANUSKA VALLEY AND THE KNIK ARM AREA NORTH OF ANCHORAGE. SMALL RESOURCES OF POTENTIALLY MINEABLE COAL ARE FOUND IN THE LITTLE SUSITNA FIELD NEAR HOUSTON. THE COAL RESOURCES OF THE WEST-CENTRAL ANCHORAGE QUADRANGLE, AS PRESENTLY KNOWN, ARE GENERALLY TOO DEEP TO BE CONSIDERED ECONOMIC AT THIS TIME.

MENTAL HEALTH AND DESIGNATED POOL LANDS OVERLAP PARTS OF ALL THE COAL FIELDS OF THE MATANUSKA VALLEY WITH THE EXCEPTION OF THE ANTHRACITE RIDGE FIELD. THE FIELDS SUBSTANTIALLY AFFECTED ARE WISHBONE HILL, YOUNG CREEK, CASTLE MOUNTAIN, AND CHICKALOON. THE COALS HERE ARE BITUMINOUS IN RANK AND OCCUR IN THE PALEOCENE CHICKALOON FORMATION. THE MINEABLE COALS OF THIS UNIT ARE FOUND IN THE UPPER 1400 FT AND RANGE GENERALLY FROM 3- TO 8-FT THICK. COALS IN THE PREMIER GROUP OF THE WISHBONE HILL FIELD LOCALLY ATTAIN THICKNESSES OF 20 FT OR MORE.

ANCHORAGE B-8 QUADRANGLE

MENTAL-HEALTH AND DESIGNATED POOL-LAND AREAS ARE LOCATED TO THE WEST OF KNIK ARM. OIL-WELL LOGS SHOW AGGREGATE COAL THICKNESSES UP TO 73 FT IN THE TOP 2000 FT OF STRATA. THE SUBBITUMINOUS COALS OCCUR IN THE TERTIARY KENAI GROUP, AND HAVE BEEN GENERALLY CLASSIFIED AS MODERATE POTENTIAL (III) BECAUSE THE RESOURCES ARE BELIEVED TO BE TOO DEEP FOR ECONOMICALLY-VIABLE SURFACE MINING.

ANCHORAGE C-4 QUADRANGLE

MINOR COAL-BEARING CHICKALOON FORMATION ROCKS ARE KNOWN TO OCCUR IN THE VALLEYS OF LOWER CARBON AND COAL CREEKS. ONE PARCEL ON LOWER CARBON CREEK IS MENTAL-HEALTH LAND. AT BEST, THIS AREA CAN BE CONSIDERED TO HAVE MODERATE POTENTIAL (III).

ANCHORAGE C-5 QUADRANGLE

MENTAL HEALTH AND DESIGNATED POOL LANDS ARE FOUND IN THE NORTHWEST PORTION OF THIS 1:63,360 QUADRANGLE. A PARCEL IN THE EXTREME NORTHWEST CORNER, WHICH IS A MINOR EXTENSION OF COAL RESOURCES IN THE KNOB HILL AREA, HAS BEEN CLASSIFIED AS VERY HIGH POTENTIAL (V) COAL LAND. DRILLING BY INDUSTRY IN THE KNOB CREEK AREA HAS PROVEN SEVERAL MILLION TONS OF POTENTIALLY MINEABLE COAL RESOURCES. A 1.5 MI WIDE BY 3.0 MI LONG BELT IN THE LITTLE GRANITE CREEK AREA HAS BEEN CLASSIFIED AS HIGH POTENTIAL (IV). PREVALENT OUTCROPS OF THE CHICKALOON FORMATION HERE SHOW GENERALLY THIN HIGH-VOLATILE BITUMINOUS COAL SEAMS.

ANCHORAGE C-6 QUADRANGLE

MENTAL HEALTH AND DESIGNATED POOL LANDS ARE FOUND IN THE NORTHERN PART OF THIS QUADRANGLE, WHICH CONTAINS THE BULK OF THE KNOWN COAL RESOURCES OF THE WISHBONE HILL DISTRICT OF THE MATANUSKA COAL FIELD. ABUNDANT DRILLING IN THE AREA BY INDUSTRY SHOWS COAL AGGREGATE THICKNESSES TO NEARLY 100 FT IN BEDS UP TO 20-FT THICK. SURFACE-MINEABLE RESOURCES ARE MAINLY LIMITED TO COALS IN THE MOOSE CREEK AND ESKA AREAS, BUT THE HIGH-VOLATILE BITUMINOUS COALS OF THE DISTRICT MAY BE MINED BY UNDERGROUND METHODS IN OTHER AREAS.

ANCHORAGE C-7 QUADRANGLE

THIS INCH-MILE QUADRANGLE CONTAINS SCATTERED PARCELS OF MENTAL HEALTH LANDS. DESIGNATED POOL LANDS ARE FOUND IN THE SOUTHEAST AND NORTHEAST PORTIONS OF THE QUADRANGLE. A 1-2 MI WIDE BELT OF COAL-BEARING ROCKS STRETCHES THROUGH THE MIDDLE REACHES OF THE QUADRANGLE NORTH OF THE LITTLE SUSITNA RIVER. THIS BELT IS AN EASTWARD EXTENSION OF THE LITTLE SUSITNA FIELD. THE SUBBITUMINOUS COAL BEDS ARE GENERALLY THIN AND PROBABLY CANNOT BE ECONOMICALLY SURFACE-MINED. TWO OIL-WELL DRILLING LOGS IN THE QUADRANGLE SHOW AGGREGATE COAL THICKNESSES OF 31 FT AND 87 FT RESPECTIVELY IN THE UPPER 2000 FT OF STRATA.

ANCHORAGE C-8 QUADRANGLE

THIS QUADRANGLE INCLUDES SCATTERED PARCELS OF MENTAL-HEALTH AND DESIGNATED POOL LANDS. IT CONTAINS THE COALS OF THE LITTLE SUSITNA FIELD IN THE HOUSTON AREA (CLASS IV COAL LAND), WHICH HAVE BEEN PROFITABLY MINED IN THE PAST. SUBBITUMINOUS COALS TO 6-FT THICK HAVE BEEN OBSERVED IN OUTCROP, AND BEDS TO 10-FT THICK ARE KNOWN FROM DRILLING DATA TO OCCUR IN THE UPPER 2000 FT OF STRATA.

ANCHORAGE D-2 QUADRANGLE

POOL LANDS COVER THE NORTHERN PART OF THIS QUADRANGLE. ISOLATED COAL-BEARING ROCKS HAVE BEEN FOUND IN THE BILLY CREEK AREA IN THE NORTHWESTERN PART OF THE QUADRANGLE. HOWEVER, THIS AREA HAS BEEN CLASSIFIED AS LOW POTENTIAL (II) COAL LAND.

ANCHORAGE D-3 QUADRANGLE

CONTAINS POOL LANDS IN THE NORTHERN PART OF THE QUADRANGLE. MINOR COAL-BEARING ROCKS OCCUR IN THE CARIBOU CREEK-BILLY CREEK AREA IN THE NORTHEAST PART OF THE QUADRANGLE. COALS OF THE ANTHRACITE RIDGE FIELD IN THE SOUTHERN PART OF THE QUADRANGLE ARE NOT INCLUDED IN THE DESIGNATED POOL-LAND AREAS.

ANCHORAGE D-4 QUADRANGLE

THIS QUADRANGLE CONTAINS MENTAL HEALTH LANDS IN THE SOUTHWESTERN PORTION AND DESIGNATED POOL LANDS COVERING LARGE AREAS. IT INCLUDES THE CHICKALOON COAL FIELD, THE EXTREME EASTERN PART OF THE CASTLE MOUNTAIN FIELD, AND THE WEST END OF THE ANTHRACITE RIDGE FIELD. BECAUSE THE MINEABILITY OF THE COALS IN THESE FIELDS HAS NOT BEEN FIRMLY ESTABLISHED, THEY ARE CLASSIFIED AS HIGH POTENTIAL (IV) RATHER THAN VERY HIGH POTENTIAL (V) COAL LANDS. COALS OF THE CHICKALOON FIELD GENERALLY AVERAGE LESS THAN 5-FT THICK BUT RANGE UP TO 16-FT THICK, THEY ARE GENERALLY OF MEDIUM- TO LOW-VOLATILE BITUMINOUS RANK. DRILLING DATA SHOW COALS TO 5-FT THICK IN THE COAL CREEK AREA AND AGGREGATE COAL THICKNESSES TO OVER 40-FT IN 800-FT OF STRATA.

ANCHORAGE D-5 QUADRANGLE

MENTAL HEALTH AND POOL LANDS OCCUR OVER THE SOUTHERN TWO-THIRDS OF THIS QUADRANGLE. COAL FIELDS INCLUDED ARE CASTLE MOUNTAIN, YOUNG CREEK, AND THE KNOB HILL AREA OF WISHBONE HILL. THE MEDIUM- TO LOW-VOLATILE BITUMINOUS COALS OF THE CASTLE MOUNTAIN FIELD AVERAGE LESS THAN 5-FT THICK BUT RANGE UP TO 9-FT THICK. THESE COALS HAVE BEEN PROFITABLY MINED IN THE PAST. HIGH-VOLATILE BITUMINOUS COALS OF THE YOUNG CREEK FIELD IN OUTCROP ARE GENERALLY THIN (LESS THAN 3-FT), BUT A BED UP TO 30-FT THICK HAS BEEN DISCOVERED NEAR RED MOUNTAIN. THE CASTLE MOUNTAIN AND YOUNG CREEK FIELDS HAVE BEEN CLASSIFIED AS HIGH POTENTIAL (IV) COAL LANDS. SEVERAL MILLIONS OF TONS OF POTENTIALLY SURFACE-MINEABLE COALS ARE KNOWN TO OCCUR IN THE KNOB HILL AREA AT THE EASTERN END OF THE WISHBONE HILL DISTRICT. THIS AREA HAS BEEN CLASSIFIED AS VERY HIGH POTENTIAL (V) COAL LAND.

ANCHORAGE D-6 QUADRANGLE

THIS QUADRANGLE CONTAINS MENTAL-HEALTH AND DESIGNATED POOL-LAND AREAS IN ITS SOUTHERN PART, IT ENCOMPASSES A NORTHEASTERN SECTION OF THE WISHBONE HILL DISTRICT, INCLUDING COAL-BEARING ROCKS OF THE CHICKALOON FORMATION NEAR THE UPPER REACHES OF ESKA AND KNOB CREEKS. THE HIGH-VOLATILE BITUMINOUS COALS IN THIS AREA HAVE BEEN CLASSIFIED AS VERY HIGH POTENTIAL (V) COAL LANDS.

HEALY QUADRANGLE

MENTAL HEALTH LANDS INCLUDE 3 TOWNSHIPS MOSTLY IN THE HEALY D-4 QUADRANGLE (T. 11 S, R. 7 W; T. 12 S, R. 7 W; AND T. 12 S, R. 6 W), BUT ARE ALSO FOUND IN HEALY D-5 QUADRANGLE. POTENTIALLY MINEABLE COALS OCCUR EXCLUSIVELY THOUGH IN HEALY D-4 QUADRANGLE AND ARE FOUND IN THE HEALY CREEK FIELD AND THE WESTERN END OF HOSANNA CREEK FIELD. DIPS OF COAL BEDS ARE GENERALLY STEEPER IN HEALY CREEK FIELD (AVERAGING 30°) THAN IN THE HOSANNA CREEK FIELD (AVERAGING 15°). THE COALS ARE GENERALLY SUBBITUMINOUS C AND ARE CONTAINED IN THE HEALY CREEK, SUNTRANA, AND LIGNITE CREEK FORMATIONS (OLIGOCENE-MIOCENE AGE) OF THE USIBELLI GROUP. HEALY CREEK FORMATION COALS ARE THICK (TO 65-FT, GENERALLY 10-30 FT) AND LENTICULAR, SUNTRANA FORMATION COALS ARE THICK (TO 60-FT) AND RELATIVELY CONTINUOUS, AND LIGNITE CREEK FORMATION COALS ARE THIN (LESS 11-FT) AND DISCONTINUOUS. SEAMS NO. 1, NO. 2, AND NO. 6 OF THE SUNTRANA FORMATION ARE THE THICKEST INDIVIDUAL BEDS.

HEALY D-4 QUADRANGLE

MENTAL HEALTH LANDS INCLUDE THE WESTERN END OF THE HOSANNA CREEK FIELD AND THE HEALY CREEK FIELD. THE WESTERN HOSANNA CREEK FIELD IS THE SITE OF THE USIBELLI COAL MINE. HEALY CREEK IS THE SITE OF SIGNIFICANT PAST MINING ACTIVITY, BECAUSE OF PAST, PRESENT, AND POTENTIAL FUTURE MINING THE HOSANNA CREEK FIELD AND HEALY CREEK FIELD SHOULD CLEARLY BE CLASSIFIED AS VERY HIGH POTENTIAL (V) COAL LAND.

HEALY D-5 QUADRANGLE

INCLUDES A SMALL STRIP OF MENTAL HEALTH LAND ALONG THE EASTERN BORDER OF THE QUADRANGLE. THIS AREA IS GENERALLY NOT THOUGHT TO CONTAIN SIGNIFICANT POTENTIALLY MINEABLE COAL.

KENAI QUADRANGLE

MENTAL HEALTH LANDS IN THIS QUADRANGLE ENCOMPASS AREAS ALONG THE KENAI RIVER AND IN ISOLATED TOWNSHIPS ON THE KENAI PENINSULA. THE FORMER AREAS ARE CLASSIFIED IN THEIR ENTIRETY AS VERY LOW POTENTIAL (1). POOL LANDS OF THIS QUADRANGLE ENCOMPASS EXTREME SOUTHERN EXTENSIONS OF THE ROCKS OF THE BELUGA COAL FIELD (ON THE WESTERN SHORE OF COOK INLET); PORTIONS OF THE KENAI FIELD SOUTH OF CAPE KASILOF (EASTERN SHORE OF COOK INLET); AND KALGIN ISLAND IN COOK INLET. THE SOUTHERN BELUGA AREA COALS ARE EVIDENTLY OF THE MIOCENE TYONEK FORMATION. THE LIGNITIC TO SUBBITUMINOUS C COALS THAT CROP OUT ON BEACHES SOUTH OF CAPE KASILOF ON THE KENAI PENINSULA BELONG TO THE PLIOCENE STERLING FORMATION.

KENAI A-4 QUADRANGLE

INCLUDES PARCELS OF DESIGNATED POOL LANDS ALONG COOK INLET COASTAL AREAS IN THE NORTHWEST PART OF THE QUADRANGLE. OUTCROP COALS OF THE STERLING FORMATION RANGE IN THICKNESS TO 5-FT AND ARE LIGHT-TO-SUBBITUMINOUS C RANK. A DRILL HOLE NORTH OF FALLS CREEK PENETRATES 17 FT OF COAL IN 2000 FT OF STRATA. THIS AREA CAN BE CLASSIFIED AT BEST AS MODERATE POTENTIAL (III).

KENAI A-5 QUADRANGLE

INCLUDES MENTAL HEALTH LAND IN ONE SECTION IN THE VICINITY OF NINILCHIK AND DESIGNATED POOL LANDS ALONG THE COOK INLET COAST. DRILLING BY INDUSTRY HAS SHOWN COAL BEDS TO 15-FT THICK ON LOWER DEEP CREEK. OUTCROP DATA SHOW COALS TO 5-FT THICK IN COASTAL AREAS JUST NORTH OF NINILCHIK. THESE PARCELS HAVE BEEN CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

KENAI B-4 QUADRANGLE

INCLUDES PARCELS OF MENTAL HEALTH AND POOL LANDS ALONG THE COAST SOUTH OF CAPE KASLOF. ONE DRILL HOLE SHOWS AN AGGREGATE COAL THICKNESS OF 9 FT IN 2000 FT. THIS LAND HAS GENERALLY BEEN CLASSIFIED AS LOW POTENTIAL (II).

KENAI B-6 QUADRANGLE

INCLUDES A PARCEL OF DESIGNATED POOL LAND ON SOUTHERN KALGIN ISLAND IN COOK INLET. ONE OIL-WELL LOG SHOWS AN AGGREGATE 55 FT OF COAL IN 2000 FT OF STRATA. THIS AREA HAS BEEN CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

KENAI D-5 QUADRANGLE

DESIGNATED POOL LANDS ENCOMPASS THE NORTHWESTERN PORTION OF THE QUADRANGLE IN THE VICINITY OF THE McARTHUR RIVER DELTA. OIL-WELL LOGS ALONG THE COAST SHOW AGGREGATE COAL THICKNESSES RANGING TO 53 FT IN 2000 FT OF STRATA. THIS COAL-BEARING ZONE IS EVIDENTLY IN THE TYONEK FORMATION AND APPEARS TO BE EXTREME SOUTHERN EXTENSIONS OF THE ROCKS OF THE BELUGA COAL FIELD. THIS AREA HAS BEEN CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

KENAI D-6 QUADRANGLE

POOL LANDS ENCOMPASS THE NORTHEASTERN PORTION OF THIS QUADRANGLE. ONE DRILL HOLE SHOWS AN AGGREGATE COAL THICKNESS OF 15 FT IN 2000 FT OF STRATA. AT BEST, THIS AREA CAN BE RATED AS MODERATE POTENTIAL (III) COAL LAND.

PORT MOLLER QUADRANGLE

8

POOL LANDS ENCOMPASS THE COASTAL REGION NORTH OF COAL VALLEY FROM MUD BAY TO POINT DIVIDE, AND INCLUDE THE MOLLER SPIT AND AREAS NORTHWEST OF HERENDEEN BAY. THE HERENDEEN BAY COAL FIELD IS LOCATED IN THIS QUADRANGLE.

THE AFFECTED COALS ON POOL LANDS ARE PART OF THE CRETACEOUS AGE COAL VALLEY MEMBER OF THE CHIGNIK FORMATION. THEY ARE HIGH-VOLATILE BITUMINOUS IN RANK. THE COALS RANGE TO 8-FT THICK BUT GENERALLY AVERAGE 2- TO 4-FT THICK.

PORT MOLLER D-2 QUADRANGLE

POOL LANDS COVER COASTAL REGIONS IN THE VICINITY OF MUD BAY AND MOLLER SPIT. THE HIGH POTENTIAL (CLASS IV) COALS OF UPPER COAL VALLEY ARE NOT WITHIN DESIGNATED POOL-LAND AREAS. HOWEVER, OUTCROPS OF THIN COALS OCCUR ALONG THE COAST WEST OF THE HOT SPRING; THIS AREA IS CLASSIFIED AS MODERATE POTENTIAL (III).

PORT MOLLER D-3 QUADRANGLE

INCLUDES DESIGNATED POOL-LAND AREAS NEAR POINT DIVIDE AND NORTHWESTERN HERENDEEN BAY THAT ARE CLASSIFIED AS MODERATE (III) OR LOW (II) POTENTIAL. HIGH-POTENTIAL (IV) COAL LANDS IN THE VICINITIES OF COAL POINT, COAL BLUFF, AND MINE HARBOR ARE NOT CONTAINED IN POOL-LAND AREAS.

SELDOVIA QUADRANGLE

DESIGNATED POOL LANDS ENCOMPASS MOST COASTAL AREAS OF THE KENAI PENINSULA SOUTH OF ANCHOR POINT AND SOUTHWEST OF FOX CREEK CANYON INCLUDING THE HOMER AREA. ISOLATED PARCELS OF MENTAL HEALTH LANDS ARE FOUND IN THE HILLS NORTH OF HOMER AND ON THE HOMER SPIT.

ALL THE COALS OF THIS QUADRANGLE ARE INCLUDED IN THE KENAI COAL FIELD AND ARE MIOCENE TO PLIO-CENE IN AGE. THEY INCLUDE THE STERLING FORMATION NORTH OF ANCHOR POINT AND EAST OF McNEIL CANYON AND ALSO IN THE UPPER REACHES OF HOMER ESCARPMENT. COALS SOUTH OF ANCHOR POINT AND WEST OF McNEIL CANYON ARE IN THE BELUGA FORMATION. THE COALS RANGE TO 7-FT THICK BUT GENERALLY AVERAGE 2- TO 4-FT THICK.

SELDOVIA C-4 QUADRANGLE

THIS QUADRANGLE CONTAINS POOL LANDS ALONG THE COAST FROM HOMER TO COTTONWOOD CREEK AND INCLUDES MOST OF THE HOMER ESCARPMENT. A SMALL PARCEL OF MENTAL HEALTH LAND OCCUPIES THE SOUTHERN PART OF HOMER SPIT.

SUBBITUMINOUS COALS OF THE BELUGA FORMATION TO 5-FT THICK OCCUR SOUTHWEST OF McNEIL CANYON AND SUBBITUMINOUS COALS OF THE STERLING FORMATION OCCUR NORTHEAST OF THE CANYON. THE AREA INCLUDES THE POTENTIALLY MINEABLE B-D BEDS AND THE BRADLEY SEAM. IN THE VICINITY OF McNEIL CANYON, TOTAL AGGREGATE COAL THICKNESS RANGES TO ABOUT 18 FT IN 360 FT OF STRATA.

SELDOVIA C-5 QUADRANGLE

INCLUDES DESIGNATED POOL LANDS ALONG THE COOK INLET COAST, ANCHOR RIVER, AND INLAND APPROXIMATELY 4 MILES, AND TWO SECTIONS OF MENTAL HEALTH LANDS. BELUGA FORMATION SUBBITUMINOUS C COALS RANGE TO 7-FT THICK. THE COOPER BED NEAR HOMER HAS BEEN MINED EXTENSIVELY IN THE PAST. COASTAL REGIONS WITH ABUNDANT OUTCROP DATA HAVE BEEN CLASSIFIED AS HIGH POTENTIAL (IV) COAL LANDS.

SELDOVIA D-3 QUADRANGLE

CONTAINS DESIGNATED POOL LANDS AT THE HEAD OF KACHEMAK BAY IN THE VICINITY OF FOX CREEK CANYON. THE COALS ARE WITHIN THE STERLING FORMATION, SUBBITUMINOUS TO LIGNITIC, AND RANGE UP TO 5-FT THICK. A 3-4 MILE WIDE STRIP OF LAND NORTH OF KACHEMAK BAY AND ALONG THE LOWER REACHES OF FOX RIVER HAS BEEN CLASSIFIED AS HIGH POTENTIAL (IV) COAL LAND. EXTENSIONS OF THIS AREA TO THE NORTH-EAST ALONG UPPER FOX RIVER ARE CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

SELDOVIA D-4 QUADRANGLE

INCLUDES DESIGNATED POOL-LAND AREAS IN THE SOUTHERN PART OF THE QUADRANGLE ALONG THE COAST OF KACHEMAK BAY. SUBBITUMINOUS C COALS OF THE STERLING FORMATION HERE RANGE TO 6-FT THICK. AREAS ALONG EASTLAND AND FALLS CREEKS HAVE BEEN CLASSIFIED AS HIGH POTENTIAL (IV) COAL LAND. TO THE WEST IN THE VICINITY OF BALD MOUNTAIN, IT HAS BEEN CLASSIFIED AS LOW POTENTIAL (II) COAL LAND.

SELDOVIA D-5 QUADRANGLE

DESIGNATED POOL LANDS INCLUDE TWO PARCELS ALONG THE COOK INLET COAST. THE NORTHERN REGION HAS OUTCROPPING COALS IN THE VICINITY OF HAPPY CREEK; THE SOUTHERN REGION INCLUDES AREAS ALONG THE LOWER ANCHOR RIVER. IN BOTH INSTANCES, THEY HAVE BEEN CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

TALKEETNA QUADRANGLE

THIS QUADRANGLE CONTAINS THE NORTHERN PORTION OF THE YENTNA COAL FIELD. COALS BELONG TO THE MIOCENE TYONEK FORMATION AND THE PLEISTOCENE STERLING FORMATION. MOST OF THE COAL RESOURCES OF THE QUADRANGLE ARE LOCATED NEAR THE PETER HILLS AND FAIRVIEW MOUNTAIN AND DO NOT OCCUR ON MENTAL-HEALTH OR DESIGNATED POOL-LAND AREAS. PARCELS OF MENTAL-HEALTH LANDS OCCUR AROUND TALKEETNA AND POOL LANDS ALONG THE LOWER CHULITNA RIVER.

TALKEETNA B-1 QUADRANGLE

MINOR AREAS OF TERTIARY TYONEK AND STERLING FORMATIONS OCCUR WITHIN THIS QUADRANGLE BUT NONE IN THE MENTAL-HEALTH PARCELS LOCATED NEAR TALKEETNA. THESE AREAS ARE CONSIDERED TO HAVE LOW (II) TO VERY LOW (I) COAL POTENTIAL.

TALKEETNA C-1 QUADRANGLE

DESIGNATED POOL LANDS ENCOMPASS ABOUT TWO-THIRDS OF THIS QUADRANGLE. AN OUTCROP OF TERTIARY KENAI GROUP (UNDIVIDED) STRATA OCCURS NEAR TROUBLESOME CREEK. THIS SPECIFIC AREA IS CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND AND THE REMAINDER OF THE REGION AS LOW POTENTIAL (II) COAL LAND.

TALKEETNA C-2 QUADRANGLE

INCLUDES A LARGE PARCEL OF DESIGNATED POOL LANDS IN THE CENTRAL PORTION OF THE QUADRANGLE ALONG THE LOWER TOKOSITNA RIVER. TWO SMALL AREAS OF MODERATE POTENTIAL (III) COAL LANDS HAVE BEEN DEFINED BY THE OUTCROP EXTENT OF TERTIARY KENAI GROUP COAL-BEARING ROCKS NORTH OF THE PETER HILLS. COAL BEDS IN THE AREA ARE GENERALLY THIN (LESS 4-FT) AND DISCONTINUOUS.

TALKEETNA D-1 QUADRANGLE

DESIGNATED POOL LANDS ENCOMPASS THE EASTERN AND SOUTHEASTERN PART OF THE QUADRANGLE. NO TERTIARY COAL-BEARING ROCKS CROP OUT IN THIS REGION. HENCE, THIS AREA HAS BEEN CLASSIFIED AS LOW POTENTIAL (II) COAL LAND.

TALKEETNA MOUNTAINS QUADRANGLE

DESIGNATED POOL LANDS COVER EXTENSIVE PORTIONS OF THIS QUADRANGLE IN TWO SEPARATE AREAS---THE UPPER CHULITNA RIVER SOUTH OF BROAD PASS AND MOST OF THE CENTRAL AND EASTERN PARTS OF THE QUADRANGLE. NO TERTIARY COAL-BEARING ROCKS CROP OUT IN THE UPPER CHULITNA RIVER AREA. IN THE TALKEETNA MOUNTAINS QUADRANGLE, THE MAIN AREAS OF COAL-BEARING ROCKS OCCUR IN THE VICINITY OF WATANA CREEK IN THE NORTHERN PART, IN THE SOUTHEASTERN PORTION NORTH OF LITTLE NELCHINA RIVER, AND IN THE SOUTHWESTERN PART NEAR MONTANA CREEK. IN THE WATANA CREEK AREA, THERE ARE NUMEROUS LIGNITIC COAL BEDS TO 2-FT THICK. COALS IN THE NELCHINA AREA ARE CONSIDERED TO BE A PART OF THE COPPER RIVER FIELD. COALS TO 5-FT THICK OCCUR ON UPPER MONTANA CREEK IN THE SOUTHWESTERN PART OF THE QUADRANGLE.

TALKEETNA MOUNTAINS A-1, A-2, B-1, AND B-2 QUADRANGLES

POOL LANDS COVER THE ENTIRE QUADRANGLES. TERTIARY COAL-BEARING ROCKS CROP OUT IN SCATTERED AREAS ALONG TYONE, RED, YACKO, AND BILLY CREEKS AND INCLUDE THIN BEDS OF LIGNITE. THESE AREAS HAVE BEEN CLASSIFIED AS LOW (II) TO MODERATE (III) POTENTIAL.

TALKEETNA MOUNTAINS C-6 QUADRANGLE

POOL LANDS ENCOMPASS THE NORTHWEST PORTION OF THE QUADRANGLE. NO COAL-BEARING ROCKS CROP OUT IN THE REGION AND IT HAS BEEN CLASSIFIED AS LOW POTENTIAL (II).

TALKEETNA MOUNTAINS D-3 QUADRANGLE

POOL LANDS ENCOMPASS THE SOUTHERN HALF OF THE QUADRANGLE. LIGNITE BEDS OF THE WATANA DISTRICT RANGE TO 2-FT THICK IN A 500-FT SECTION OF COAL-BEARING STRATA. A LARGE AREA ALONG LOWER WATANA CREEK HAS BEEN CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

TALKEETNA MOUNTAINS D-6 QUADRANGLE

POOL LANDS ENCOMPASS MOST OF THE QUADRANGLE BUT NO COAL-BEARING ROCKS CROP OUT IN THE REGION. IT HAS BEEN CLASSIFIED AS LOW POTENTIAL (II).

TYONEK QUADRANGLE

MENTAL HEALTH AND POOL LANDS ENCOMPASS THE EXTREME EASTERN SIDE OF THE QUADRANGLE AND MOST OF ITS SOUTHERN HALF. THESE LANDS CONTAIN MAJOR RESOURCES OF MINEABLE SUBBITUMINOUS COAL MOSTLY IN THE BELUGA COAL FIELD. OTHER COAL RESOURCES LIE AT DEPTH IN THE LOWER SUSITNA BASIN, AN AREA CLASSICALLY REFERRED TO AS THE SUSITNA FIELD.

COALS OF THE BELUGA FIELD ARE THICK (TO OVER 50-FT) AND OF SUBBITUMINOUS C RANK. THEY OCCUR IN THE MIOCENE TYONEK FORMATION.

TYONEK A-1 QUADRANGLE

INCLUDES A LARGE AREA OF POOL LANDS MOSTLY OFFSHORE IN THE TURNAGAIN ARM REGION. ONE DRILL LOG SHOWS 12 FT OF COAL IN 2000 FT OF STRATA. LAND AREAS IN THIS QUADRANGLE ARE CLASSIFIED AS MODERATE POTENTIAL (III). ANY OFFSHORE COAL RESOURCES MUST CLEARLY BE CONSIDERED AS VERY LOW POTENTIAL (I) AT THIS TIME.

TYONEK A-2 QUADRANGLE

INCLUDES THE EXTREME SOUTHERN REACHES OF THE SUSITNA FLATS. POOL LANDS EXTEND OFFSHORE INTO THE BAY OF COOK INLET. AT BEST, THE LANDWARD PORTIONS OF THIS QUADRANGLE CAN BE CLASSIFIED AS MODERATE POTENTIAL (III).

TYONEK A-3 QUADRANGLE

MENTAL-HEALTH AND POOL LANDS ENCOMPASS THE LOWER BELUGA RIVER REGION. ONE OIL-WELL LOG IMMEDIATELY WEST OF THE QUADRANGLE BOUNDARY SHOWS 80-FT OF COAL IN THE UPPER 1000-FT OF STRATA. SIGNIFICANT COAL RESOURCES ARE BELIEVED TO OCCUR IN THE LOWER BELUGA RIVER REGION. HENCE, A LARGE PORTION OF THIS AREA AT THE WEST SIDE OF THE QUADRANGLE HAS BEEN CLASSIFIED AS VERY HIGH POTENTIAL (V) COAL LAND.

TYONEK A-4 QUADRANGLE

MENTAL-HEALTH LAND ENCOMPASSES THE NORTHERN TWO-THIRDS OF THE ONSHORE PORTION OF THIS QUADRANGLE. THEY INCLUDE A LARGE PART OF THE COAL RESOURCES IN THE LOWER CHUITNA RIVER AND BELUGA RIVER AREAS. EXPLORATION BY INDUSTRY SINCE THE LATE 1960'S HAS PROVEN MAJOR RESOURCES OF POTENTIALLY MINEABLE SUBBITUMINOUS COAL IN THE BELUGA COAL FIELD. FOR THIS REASON, ALL OF THIS REGION HAS TO BE CLASSIFIED AS VERY HIGH POTENTIAL (V) COAL LAND.

ONEK A-5 QUADRANGLE

MENTAL HEALTH LANDS OF THIS QUADRANGLE INCLUDE MAJOR RESOURCES OF SUBBITUMINOUS COAL IN THE PER CHUITNA RIVER REGION SOUTH OF CASTLE MOUNTAIN FAULT. COAL DEVELOPMENT HAS BEEN PLANNED BY INDUSTRY FOR MANY YEARS. HENCE, IT HAS BEEN CLASSIFIED AS VERY HIGH POTENTIAL (V) COAL LAND. AREAS TO THE SOUTH THAT ARE MORE POORLY KNOWN ARE CLASSIFIED AS HIGH POTENTIAL (IV) COAL LAND.

ONEK A-6 QUADRANGLE

DESIGNATED POOL LANDS OCCUPY A LARGE PARCEL IN THE SOUTHEAST QUADRANT OF THIS QUADRANGLE ALONG LOWER McARTHUR RIVER. A SMALL PART OF THIS IS CLASSIFIED AS HIGH POTENTIAL (IV) COAL LAND, BUT THE MAJORITY IS CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

ONEK B-1 QUADRANGLE

MENTAL HEALTH LANDS COVER MOST OF THE EASTERN HALF OF THE QUADRANGLE WHILE POOL LANDS COVER MOST OF THE WESTERN HALF OF THE QUADRANGLE. ALL OF THIS AREA IS CLASSIFIED AS MODERATE POTENTIAL (II) COAL LAND.

ONEK B-2 QUADRANGLE

DESIGNATED POOL LANDS COVER THE NORTHERN THIRD OF THIS QUADRANGLE ENCOMPASSING A LARGE AREA OF THE LOWER SUSITNA RIVER DELTA. THIS AREA IS CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

ONEK B-3 QUADRANGLE

DESIGNATED POOL LANDS ENCOMPASS MOST OF THE SOUTHEASTERN HALF OF THIS QUADRANGLE. IT CONTAINS PART OF THE BELUGA FIELD THAT HAS BEEN CLASSIFIED AS VERY HIGH POTENTIAL (V) COAL LAND. A LARGE AREA EAST OF THIS AND ALONG THE LOWER THEODORE RIVER HAS BEEN CLASSIFIED AS HIGH POTENTIAL (IV) COAL LAND.

ONEK B-4 QUADRANGLE

MENTAL HEALTH LANDS ENCOMPASS ONLY THE SOUTHWESTERN PART AND EXTREME SOUTHERN MARGIN OF THE QUADRANGLE. THE LATTER AREA INCLUDES A STRIP OF VERY HIGH POTENTIAL (V) COAL LAND AT THE SOUTHWESTERN EDGE OF THE QUADRANGLE.

ONEK B-5 QUADRANGLE

MENTAL HEALTH LAND ENCOMPASSES THE SOUTHEASTERN PORTION OF THIS QUADRANGLE INCLUDING A SMALL AREA OF VERY HIGH POTENTIAL (V) COAL LAND AND AN AREA OF HIGH POTENTIAL (IV) COAL LAND. OTHER PORTIONS OF THE QUADRANGLE CONTAIN MAJOR COAL RESOURCES THAT ARE NOT WITHIN MENTAL HEALTH LANDS.

ONEK C-1 QUADRANGLE

MENTAL HEALTH AND DESIGNATED POOL LANDS OCCUR IN THE EASTERN PORTION OF THE QUADRANGLE EAST OF THE SUSITNA RIVER. DRILLING DATA SHOWS AN AGGREGATE 72 FT OF COAL IN 2000 FT OF STRATA AT ONE LOCATION. ALL OF THIS REGION IS CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND.

ONEK D-1 QUADRANGLE

MENTAL HEALTH LANDS INCLUDE PARCELS IN THE EASTERN HALF OF THE QUADRANGLE EAST OF THE SUSITNA RIVER. THE REGION INCLUDES NO COAL-BEARING OUTCROPS BUT IT HAS BEEN CLASSIFIED AS MODERATE POTENTIAL (III) COAL LAND BECAUSE IT LIES IN A KNOWN COAL-BEARING PROVINCE.

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- WARFIELD, R.S., 1963, INVESTIGATION OF A SUBBITUMINOUS COAL DEPOSIT SUITABLE FOR OPENCUT MINING, BELUGA RIVER COAL FIELD, ALASKA: U.S. BUREAU OF MINES REPORT OF INVESTIGATIONS 6238, 100 P.

DEFINITIONS

DEPOSIT...NATURALLY OCCURRING CONCENTRATION OF COAL IN THE EARTH'S CRUST SUCH THAT ECONOMIC EXTRACTION IS CURRENTLY OR POTENTIALLY FEASIBLE; A COAL RESOURCE.

DEPTH LIMITS...ONLY COALS WITHIN THE 500-FT OVERBURDEN LIMIT ARE CONSIDERED IN THE HIGH-ASSURANCE CATEGORY; COALS TO 1000-FT OVERBURDEN LIMIT ARE CONSIDERED IN THE MODERATE-ASSURANCE CATEGORY; AND COALS TO THE 2000-FT OVERBURDEN LIMIT ARE CONSIDERED IN THE LOW-ASSURANCE CATEGORY.

ESTIMATE...A DETERMINATION AS TO THE AMOUNT OR TONNAGE OF COAL IN AN AREA.

GEOLOGIC ASSURANCE...STATE OR DEGREE OF CONFIDENCE OR CERTAINTY OF THE EXISTENCE OF THE ESTIMATED QUANTITY OF RESOURCES BASED ON: (1) DISTANCE FROM POINTS OF OBSERVATION AND MEASUREMENT; (2) ABUNDANCE AND QUALITY OF GEOLOGIC DATA; AND (3) CORRELATIONS OF COAL-BEARING UNITS AND COAL BEDS.

INFERRED...A LOW DEGREE OF GEOLOGIC ASSURANCE.

INDICATED...A MODERATE DEGREE OF GEOLOGIC ASSURANCE.

MEASURED...A HIGH DEGREE OF GEOLOGIC ASSURANCE.

MINEABLE...A COAL DEPOSIT OR RESOURCE OF SUFFICIENT QUALITY, THICKNESS, AND CONTINUITY TO BE ECONOMICALLY DEVELOPED AT THE CURRENT TIME; DEVELOPABLE.

OVERBURDEN...ALL ROCK INCLUDING COAL AND/OR UNCONSOLIDATED MATERIAL OVERLYING A SPECIFIED COAL BED.

POINT OF MEASUREMENT...THE EXACT LOCATION OF AN OUTCROP, TRENCH, ADIT, OR DRILL HOLE WHERE A COAL BED HAS BEEN MEASURED FOR THICKNESS.

POINT-SOURCE DATA...SITE-SPECIFIC COAL DATA AS SHOWN ON MAPS FOR DRILL HOLES AND OUTCROP MEASUREMENTS.

QUALITY...AN INFORMAL CLASSIFICATION OF COAL RELATING TO ITS SUITABILITY FOR USE FOR A PARTICULAR PURPOSE.

QUANTITY...THE AMOUNT OR TONNAGE OF COAL.

RANK...THE CLASSIFICATION OF COALS ACCORDING TO THEIR DEGREE OF METAMORPHISM, PROGRESSIVE ALTERATION, OR COALIFICATION (MATURATION) IN THE NATURAL SERIES INCLUDING LIGNITE, SUBBITUMINOUS COAL, BITUMINOUS COAL, AND ANTHRACITE.

SQUARE MILE...640 ACRES.

THICKNESS LIMITS...FOR BITUMINOUS COALS AND ANTHRACITES, THOSE BEDS OVER 1-FT THICK ARE CONSIDERED POTENTIALLY MINEABLE; FOR SUBBITUMINOUS COALS AND LIGNITES, BEDS OVER 2.5-FT THICK ARE CONSIDERED POTENTIALLY MINEABLE.

TONNAGE FACTOR...APPROXIMATE WEIGHTS OF UNBROKEN COAL IN THE GROUND, AS FOLLOWS: ANTHRACITE= 2,000 TONS/ACRE-FT; BITUMINOUS COAL= 1,800 TONS/ACRE-FT; SUBBITUMINOUS COAL= 1,770 TONS/ACRE-FT; AND LIGNITE= 1,750 TONS/ACRE-FT.


TONNAGE FORMULA...AN ARITHMETIC CALCULATION INCLUDING THE FOLLOWING FACTORS AND PRODUCT:

$$\begin{array}{ccccccc} \text{AREA UNDERLAIN} & & \text{ACRE:MI}^2 & & \text{TONNAGE} & & \text{TOTAL} \\ \text{BY COAL} & \times & \text{CONVERSION} & \times & \text{FACTOR} & \times & \text{AGGREGATE} \\ & & \text{FACTOR} & & & & \text{THICKNESS} \\ & & & & & & = \\ \text{MI}^2 & \times & 640 \text{ ACRES/MI}^2 & \times & 1,770 \text{ TONS/ACRE-FT} & \times & 25 \text{ FT} = \text{ESTIMATED TONNAGE} \end{array}$$


TONS...ALL ESTIMATES ARE IN SHORT TONS; A SHORT TON IS EQUAL TO 0.907 METRIC TON.


LEGEND

 VERY HIGH POTENTIAL

 HIGH POTENTIAL

 MODERATE POTENTIAL

 LOW POTENTIAL

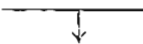
 VERY LOW POTENTIAL

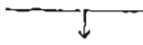
(a) GOOD DATA BASE

(b) FAIR DATA BASE

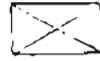
(c) POOR DATA BASE

C

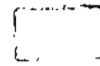
 MENTAL HEALTH LAND
BOUNDARY; ARROW
POINTS TOWARD CEN-
TER OF PARCEL

 DESIGNATED POOL LAND
BOUNDARY; ARROW POINTS
TOWARD CENTER OF PAR-
CEL

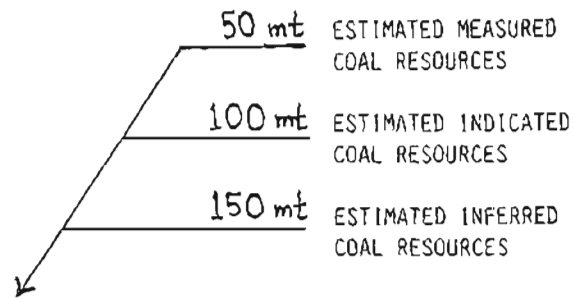
 COAL POTENTIAL BOUNDARY



PARCEL NOT INCLUDED IN
LARGER MENTAL HEALTH
LAND AREA



PARCEL NOT INCLUDED IN
LARGER POOL-LAND AREA



20/50/80 mt

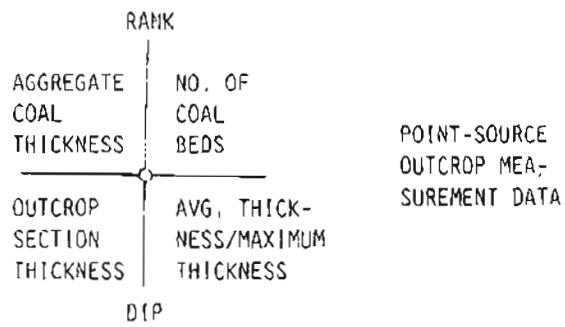
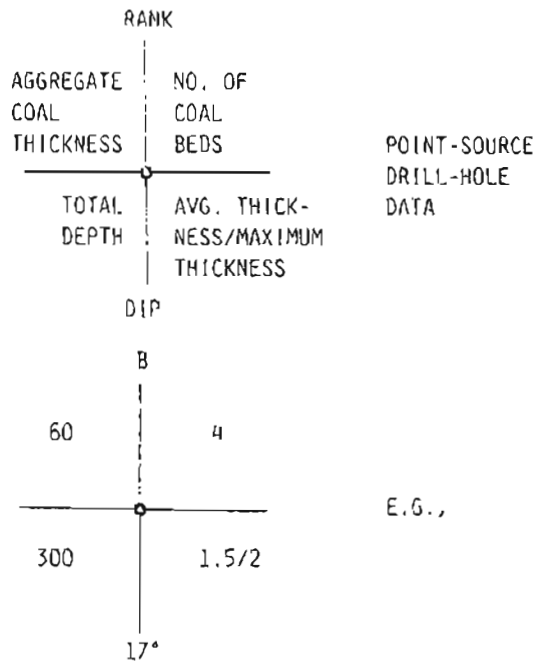
ESTIMATED MEASURED/INDICATED
AND INFERRED COAL RESOURCES
FOR SPECIFIC MENTAL HEALTH
OR POOL LAND PARCEL

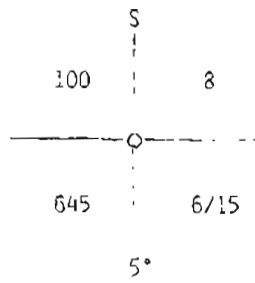
UNITS:

NOTE THAT ALL THICKNESSES
AND DEPTHS ARE IN FEET;
AMOUNTS OF COAL ARE IN
MILLIONS OF SHORT TONS.

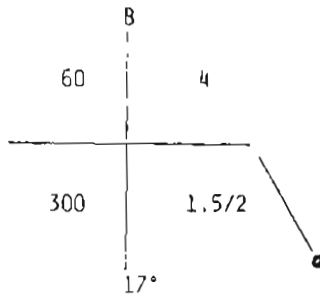
○ 25 OUTCROP WITH COAL
AGGREGATE THICKNESS

● 50/1000 DRILL HOLE SHOWING
AGGREGATE COAL THICK-
NESS TO 1000 FT DEPTH

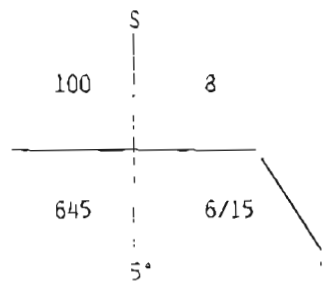




E.G.,



POINT-SOURCE
DRILL-HOLE DATA
PLOTTED ADJACENT
AREA (SOLID DOT
AT EXACT SITE
LOCATION)



POINT-SOURCE OUT-
CROP MEASUREMENT
DATA PLOTTED AD-
JACENT AREA (OPEN
DOT AT EXACT SITE
LOCATION)

1/