CONVERSION OF AN ARC/INFO COVERAGE CONTAINING MULTIPLE ATTRIBUTE DATA TO A MOSS MULTIPLE ATTRIBUTE DATA BASE

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ABSTRACT

Data exchange programs between government agencies provide an effective way of reducing redundancy of data entry and thereby reducing the overall cost of data capture. In addition to common data formats, data conversion programs are commonly used as a method by which data of interest to two or more agencies can be shared. Individual geographic information system format differences however, sometimes prevent complete utilization of shared data sets. ARC/INFO Version 5.0 supports a conversion program (ARCMOSS) allowing for the conversion of ARC/INFO coverages to MOSS data bases. The ARCMOSS program takes into account the thirty character limit for MOSS subjects and truncates the ARC/INFO attribute accordingly. As a result, critical information contained in the ARC/INFO coverage, which is not limited to thirty character attribute strings, is lost during the conversion process. A technique was developed whereby the complete ARC attributes can be transferred to a MOSS data base by utilizing MOSS's multiple attribute capabilities. ARC attributes greater than thirty characters, as well as the INFO relational database files can be ported to MOSS without losing any critical attribute information. This technique will allow MOSS users to take complete advantage of existing ARC coverages developed by other agencies, and therefore contribute to the sharing of data between agencies using different geographic information systems.

INTRODUCTION

Anadromous fisheries in the State of Alaska are extremely important to the well being of local, commercial, and recreational fishing industries, and exert significant influence on the local and state

economies. Protection and enhancement of the anadromous fisheries in the Alaskan Pacific Coast drainages are therefore critically important to the maintenance of the resource and to the economic stability of the local communities and commercial fishing industry. Both the Bureau of Land Management (BLM) and the State of Alaska, Department of Fish and Game (ADF&G) share in the responsibilities of the management, protection and enhancement of this valuable resource. Although mutually responsible for this resource, each agency has its own independent goals and objectives; each agency has unique responsibilities associated with this resource; and each agency has developed its own approaches to satisfying these responsibilities utilizing information management technologies, including geographic information system capabilities.

The BLM's Anchorage District Office, is responsible for the management of the resources which occur on Alaska's public lands. With respect to the anadromous fisheries, the Anchorage District Office has the following goals and objectives: (1) to identify the streams that support anadromous fish; (2) increase habitat productivity in streams currently utilized by anadromous fish but with production lower than potential; (3) increase the available habitat for anadromous fish production; and (4) develop interagency habitat management plans for watersheds supporting anadromous fish populations. In order to meet these goals and objectives, an accurate inventory of streams and an understanding of their respective relationships with anadromous fish species was required. Based upon the total number of streams involved, the number of fish species, and the complex relationships between anadromous fish and their habitats, the BLM was faced with a formidable task. The utilization of the BLM's Map Overlay and Statistical System provided a mechanism by which BLM could apply geographic information system technology to support their inventory and related requirements.

Concurrent with the BLM responsibilities, the ADF&G was also tasked with the protection of anadromous fisheries. Since 1982, ADF&G has intensively surveyed Alaskan waters to identify and catalog waters which are important for spawning, rearing, and migration of anadromous fisheries. In addition, ADF&G is in the process of developing a permit process for the protection of anadromous fish habitat as legislated under state law (AS 16.05.840, AS 16.05.870, AS 16.20.060, AS 16.20.260 and any activity authorized under AS 16). ADF&G also utilizes geographic information system technology, including the ARC/INFO system, to support their data inventory and analysis requirements.

The shared responsibilities with respect to the protection of anadromous fisheries, and the similarities in which each agency technically approached meeting their goals and objectives, resulted in an ideal situation in which both agencies could benefit from information the other agency had developed. A cooperative agreement was therefore established between ADF&G and BLM which provided BLM access to critical anadromous fisheries information being collected by

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ADF&G in exchange for any digital information BLM developed with respect to the geographic description of the relevant water courses. However, due to the fact that the two agencies utilized two unique geographic information systems (ie. ARC/INFO and MOSS), it was necessary to develop a conversion methodology in order to provide complete sets of information to both agencies in formats which were compatible with each agency's respective system.

The successful conversion required technical expertise in both ARC/INFO and MOSS, utilizing the data base management capability of INFO, and the multiple attribute capability of MOSS. Under BLM's contract YA-551-CT5-440003 for digitizing services, TGS Technology, Inc.'s Computer Mapping Division in Fort Collins, Colorado, had supported BLM's digitizing and MOSS data base construction requirements for several years. As a commercial data conversion service bureau, TGS's Computer Mapping Division also supports map conversion using the ARC/INFO system. Using that expertise, TGS developed the necessary technical and quality control procedures required to combine information from both agencies into two seperate, but functionally identical data bases which can now be used by both agencies in supporting their mission requirements.

METHODOLOGY

The source data included digital data files of hydrologic features in ARC/INFO format, as captured by a combination of scanning and hand digitizing, and provided by the Anchorage District Office. In addition to the digital files, hard copy maps annotated with stream codes and descriptive information concerning the anadromous fisheries associations were provide by ADF&G. ADF&G also provided the relevant publications "Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes", which describes each anadromous stream segment by number.

The digital data were provided as individual ARC coverages of 1:63,360-scale quadrangles in ARC EXPORT format. Approximately 140 quadrangles were processed. These data were loaded onto a Prime 4150, IMPORTED into ARC/INFO (Rev. 5.0) and displayed. The first phase of the project was to edge match all quadrangles to produce a continuous data base. After edgematching, each arc representative of an anadromous stream segment was coded with the ADF&G stream code value (Table 1). The development of the stream code is adequately described in the referenced ADF&G publication. Briefly, the stream code numerically defines the ADF&G statistical fishing district for the body of saltwater into which the stream flows, stream order value, and any lake associations.

Table 1 - ARC Coverage Format

FNODE	TNODE	LPOLY	RPOLY	LENGTH	User-ID#	STREAM CODE
1	2	0	0	1.4	1	335-20-16600-2741-3107

The descriptive information contained on the maps included the map name, stream name, list of species utilizing each stream segment, and the function which the stream supported (ie. migration, spawning, rearing). These data were entered into an INFO file, such that each field contained a specific attribute. Included in the INFO file was the stream code which was also associated with each stream segment in the ARC coverage (Table 2).

Table 2 - INFO File Format

STREAM CODE	MAP NAME	STREAM NAME	SPECIES	USEAGE
335-20-16600-2741-3107	Iditarod A-4	N. Fork George River	K	R

The stream code then was used to relate the ARC coverage to the INFO file, completing the ARC data processing requirement and resulting in a comprehensive ARC/INFO data base describing the anadromous fisheries. This data base was provided to the ADF&G.

To meet BLM requirements, the ARC/INFO coverage was then converted into a MOSS data base. In the ARC/INFO data base, the number of characters used to describe the each stream and associated fisheries data exceeded the thirty character limitation for a MOSS attribute. As a result, the multiple attribute capability of MOSS was utilized. The following steps were required to complete this portion of the conversion effort.

ARC coverages were first exported using the ARCMOSS command, which creates a MOSS IMPORT data set. This function requires that the data be in either the UTM projection or in geographic (ie. latitude, longitude) format. Secondly, one item from the ARC coverage must be redefined as the MOSS subject. Choices for the MOSS subject include the ARC coverage user-ID or associated attribute, that being the stream code. Since there may be two individual stream segments with identical stream codes, the unique ARC user-ID was used as the MOSS subject. The

resultant file is then imported into MOSS with the number of MOSS
subjects equal to the number of ARC coverage user-ID's (Table 3).

Table 3 - MOSS Map Format

ITEM #	SUBJECT
1	1

This completes the conversion of the stream segments from ARC/INFO to
MOSS. The next step is to convert the INFO data base into a MOSS
multiple attribute file.

The INFO file was accessed in the ARC/INFO system and SAVED to seperate
ASCII disk file using the compress option. Similar to the ARC/INFO
requirement that a common denominator be used to relate the ARC
coverage to the INFO file, MOSS also requires a common denominator to
allow for the association between the MOSS map and the MOSS multiple
attribute file. The MOSS subject, derived from the ARC user-ID,
provided this association. However, the MOSS map subject is defined as
a character string, and therefore the equivalent value in the MOSS
multiple attribute file must also be defined as a character string.
Since this information is extracted from the INFO file, where the
user-ID is an integer, a conflict occurs. The right justified integer
value from INFO will not automatically translate into a left justified
character string. A secondary program was developed which provided the
capability to make this translation successful. Once completed, the
map was then moved into the MOSS user area (Table 4).

Table 4 - MOSS Multiple Attribute File Format

SUBJECT	STREAM CODE	MAP NAME	STREAM NAME	SPECIES	USEAGE
1	335-20-16600-2741-3107	Iditarod A-4	N. Fork George River	K	R

Another important difference exists between the INFO data base and the
MOSS multiple attribute data base. In the ARC coverage, stream
segments which are not utilized by anadromous fisheries are not
described in the INFO file. In the MOSS multiple attribute file
however, each feature (subject) in the MOSS map must be accounted for
in the multiple attribute file, regardless of whether or not it has
anadromous fishery information associated with it. To resolve this

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difference, the MOSS utility RESEQUENCE command is executed on the converted INFO file. The RESEQUENCE function adds appropriate records to the multiple attribute table for those MOSS map features which do not have anadromous fishery associations (Table 5).

Table 5 - MOSS Multiple Attribute File Format - RESEQUENCED

SUBJECT	STREAM CODE	MAP NAME	STREAM NAME	SPECIES	USEAGE
1	335-20-16600-2741-3107	Iditarod A-4	N. Fork George River	K	R
2	335-20-16600-2741	Iditarod A-4	N. Fork George River	CH-CO-K-W	S-S-S-M
3					
4					
5	335-20-16600-2741-3091	Iditarod A-4	N. Fork George River	K	R

The MOSS utility function, ATTRIBUTE DESCRIBE, was then used to create a .DESCRIBE file, which defines the MOSS multiple attribute field formats. These field formats are identical to the INFO field format specifications. The MOSS ADD.ATTRIBUTE function was then executed to establish the relationship between the MOSS map and the MOSS multiple attribute table. This final step completed the conversion process, and resulted in a MOSS map which provides the user with complete data for each feature. The resultant MOSS data bases were then provided to BLM for their anadromous fishery management requirements.

CONCLUSION

The ability to convert data from one geographic information system to another provides a mechanism by which data can be shared by multiple agencies. Using standard system functions, and a minimal amount of specialized programming, valuable anadromous fisheries data are being shared between the State of Alaska and the Bureau of Land Management. Sharing these data gives both agencies equivalent data bases which they can now apply independently to each of their respective missions. Sharing data in this manner has enhanced the ability of both agencies to meet their program goals and objectives, and eliminated the potential duplication of effort which would have occurred if they pursued these efforts independently.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the technical assistance of Mr. Mike Scott, BLM, Anchorage District Office, in providing accurate digital stream data, and in providing coordination between BLM, ADF&G, and TGS Technology, Inc. for this project.

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APPENDIX

The following pages document the MOSS work sessions used in the development of the MOSS map and multiple attribute data base described in this paper. The example map was Iditarod A-4 and was one of the maps processed for this project. The authors hope that this example will allow other MOSS users to become familiar with the procedures, and promote the efforts by MOSS users to take advantage of existing ARC/INFO data sources which may be available through other agencies.

Appendix Exhibit 1 - IMPORT COMO

FUNCTION - Imports the ARC coverage into MOSS.

OK, MOSS AKHYDRO KEITH

OK, MOSS AKHYDRO KEITH

              MAP OVERLAY AND STATISTICAL SYSTEM
              8902 32 BIT RELEASE W/9001 PATCH

   PRIMOS version 22 0.1.DOI / F77 Rev. T1.3-21.0 REQUIRED
     "NEWS" COMMAND PROVIDES CURRENT SYSTEM INFORMATION

     IF YOU HAVE ANY PROBLEMS, CALL YOUR STATE GIS OFFICE
     IN EMERGENCIES   CALL THE GIS HOTLINE: (FTS) 776-0990
                                            (303) 236-0990

AKHYDRO is a valid MOSS MASTER PROJECT.

        ****
        *   FIELD VERSION   *
        * 32 BIT MOSS FOR PRIMOS 22 1.DOI   *
        * Use only the 32 Bit 89.08 Manual   *
        *   *8902* 1/25/90   *
        ****

ENTER COMMAND ? IMPORT
Input File name ?
IDA4.EXP
 What do you wish to call the new map ?

  IDA4
 Enter NAME of map to use as a template for the new map header
 or enter CARRIAGE RETURN to start map header from scratch

 ENTER SOURCE OF MAP   [   ]
TGS/CMD
 ENTER   CREATION DATE [   ]
1990
 ENTER   STUDYAREA NAME [   ]
: AKHYDRO
 ENTER   DESCRIPTION
 [   ]

_____
HYDROLOGY ON ALASKA'S IDITAROD A4
 ENTER   MAP VINTAGE [   ]
: 1989
 ENTER NUMBER OF SUBJECTS [1]
: 350
 ENTER COORDINATE SCALE FACTOR [100.0000]

          MAP PROJECTION

  # 0 PROJECTION IS GEOGRAPHIC(LON/LAT)
        COORDINATE UNITS ARE: DEGREES

 DO YOU WISH TO CHANGE THE PROJECTION DESCRIPTION [N]
: Y

OK, MOSS AKHYDRO KEITH

ELLIPSOID(0-19) :

LONGITUDE OF ANY POINT WITHIN THE UTM ZONE ?
-157 00 00
LATITUDE OF ANY POINT WITHIN UTM ZONE   4 ?
62 00 00

IS THIS HEADER INFORMATION CORRECT [Y]
  Y
   ENTER DATATYPE

   1 = POINT   11 = (X,Y,Z) POINT
   2 = LINE   12 = (X,Y,Z) LINE
   3 = POLYGON   13 = (X,Y,Z) POLYGON
   5 = SAMPLE ELEVATION POINT
 : 2

EXECUTING...PLEASE WAIT

IMPORT COMPLETE FOR THE NEW MAP: IDA4
   306 ITEMS AND   306 SUBJECTS IN THE NEW MAP

THE INPUT FILE IS IDA4.EXP
DO YOU WISH TO DELETE THE INPUT FILE [N]
  N
**** STOP

ENTER COMMAND ? BYE

  USER KEITH EXITING MOSS
**** STOP

Appendix Exhibit 2 - RESEQUENCE COMO

FUNCTION - Resequences the converted INFO file to add non-anadromous
hydrological features to the MOSS multiple attribute file, which were
not included in the INFO file.

OK, MOSS AKHYDRO KEITH

MAP OVERLAY AND STATISTICAL SYSTEM
8908 32 BIT RELEASE W/9001 PATCH

PRIMOS version 22.0.1.DOI / F77 Rev. T1.3-21.0 REQUIRED
"NEWS" COMMAND PROVIDES CURRENT SYSTEM INFORMATION

IF YOU HAVE ANY PROBLEMS, CALL YOUR STATE GIS OFFICE
IN EMERGENCIES CALL THE GIS HOTLINE: (FTS) 776-0990
                                       (303) 236-0990

AKHYDRO is a valid MOSS MASTER PROJECT.

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     ***************************************
     *           FIELD VERSION             *
     *  32 BIT MOSS FOR PRIMOS  22 1.DOI   *
     *  Use only the 32 Bit 89.08 Manual   *
     *           *8908* 1/25/90            *
     ***************************************
```
ENTER COMMAND ? UTIL

ENTER MOSS UTILITY OPTION
```
    1  =   TERMINATE UTILITY SESSION   [DEFAULT]
    2  =   DATABTEST   (MOSS MAP NAMES SUPPORT)
    3  =   ATTRIBUTE   (MOSS MULTIPLE ATTRIBUTE SUPPORT)
    4  =   ATTDES     (BUILD MULTIPLE ATTRIBUTE DEFINITION FILE)
    5  =   SUB2AT     (SUBJECT TO MULTIPLE ATTRIBUTE INPUT)
    6  =   APROJ      (MOSS MAP NAMES PROJECTION ASSIGNMENT)
    7  =   BROWZ      (MOSS MAP NAMES HEADER LISTING)
    8  =   PLOT.LEGEND (BUILD PLOTTER LEGEND FILE)
    9  =   MAKE.LOGO  (BUILD PLOTTER LOGO FILE)
   10  =   SUBEDIT    (MAP SUBJECT EDIT PROGRAM)
   11  =   SET.LEVEL  (BUILD POLYCELL TRANSLATION FILE)
   12  =   TRANSFORM  (TRANSFORM COORDINATES TO A PROJECTION)
   13  =   QUAD       (MAKE A QUAD MAP IN IMPORT/EXPORT FORMAT)
   14  =   DLG3       (USGS DLG ASCII TO MOSS)
   15  =   MAPIDX     (MAKE INDEX MAP OF PROJECT IN IMPORT/EXPORT FORMAT)
   16  =   XYSUBJECT  (REFORMAT POINT DATA TO MOSS)
   17  =   ATT2SUB    (ATTRIBUTE TO SUBJECT)
  : 3
```

PLEASE ENTER MAP.NAME
: IDA4

THE NUMBER OF ATTRIBUTES IS   7
THE NUMBER OF ITEMS IS   306

PLEASE ENTER DESIRED OPTION
```
    1  =   EXIT   [DEFAULT]
    2  =   ADD A NEW ATTRIBUTE
    3  =   UPDATE AN EXISTING ATTRIBUTE
    4  =   CHANGE/DELETE KEY OR DESCRIPTOR
    5  =   LIST ATTRIBUTE FIELDS
    6  =   SEARCH AN ATTRIBUTE FIELD
    7  =   RESEQUENCE INPUT DATA FILE
    8  =   DELETE THE ATTRIBUTE FILE
  : 7
```

OK, MOSS AKHYDRO KEITH

ENTER THE SOURCE OF ORDER FOR THE ATTRIBUTE FILE
  1 = Exit [Default]
  2 = Map   IDA4
  3 = File IDA4.OUT
: 2
Enter name of data file to be resequenced:
IDA4.FISH
Enter START and STOP column positions (START# STOP#)
of the matching subject field in the data file
48,51
Enter SUBJECT search start position [1]
: 1
RESEQUENCING, PLEASE WAIT...
COULD NOT FIND SUBJECT 1 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 2 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 3 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 4 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 5 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 6 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 7 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 8 IN DATA FILE - WRITING A BLANK RECORD
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COULD NOT FIND SUBJECT 177 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 178 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 179 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 183 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 184 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 186 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 187 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 190 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 191 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 192 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 193 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 195 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 196 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 199 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 200 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 201 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 203 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 204 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 210 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 211 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 214 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 216 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 217 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 218 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 219 IN DATA FILE - WRITING A BLANK RECORD
```

OK, MOSS AKHYDRO KEITH

```
COULD NOT FIND SUBJECT 223 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 225 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 226 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 228 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 229 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 230 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 234 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 235 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 237 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 238 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 239 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 240 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 241 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 243 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 244 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 246 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 249 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 250 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 252 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 256 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 257 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 259 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 260 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 261 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 263 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 268 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 271 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 273 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 275 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 276 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 277 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 281 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 282 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 283 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 285 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 286 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 287 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 288 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 289 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 290 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 291 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 292 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 293 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 295 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 296 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 297 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 299 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 300 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 301 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 302 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 303 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 304 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 305 IN DATA FILE - WRITING A BLANK RECORD
COULD NOT FIND SUBJECT 306 IN DATA FILE - WRITING A BLANK RECORD
```

THE NAME OF YOUR RESEQUENCED DATA FILE IS: IDA4.FISH.RES

```
   THE NUMBER OF ATTRIBUTES IS      - 7
   THE NUMBER OF ITEMS IS           306

   PLEASE ENTER DESIRED OPTION
    1  =  EXIT   [DEFAULT]
    2  =  ADD A NEW ATTRIBUTE
    3  =  UPDATE AN EXISTING ATTRIBUTE
    4  =  CHANGE/DELETE KEY OR DESCRIPTOR
    5  =  LIST ATTRIBUTE FIELDS
    6  =  SEARCH AN ATTRIBUTE FIELD
    7  =  RESEQUENCE INPUT DATA FILE
    8  =  DELETE THE ATTRIBUTE FILE
   : 1
**** STOP
```

```
   ENTER MOSS UTILITY OPTION
    1  =  TERMINATE UTILITY SESSION   [DEFAULT]
    2  =  DATABTEST   (MOSS MAP NAMES SUPPORT)
    3  =  ATTRIBUTE   (MOSS MULTIPLE ATTRIBUTE SUPPORT)
    4  =  ATTDES      (BUILD MULTIPLE ATTRIBUTE DEFINITION FILE)
    5  =  SUB2AT      (SUBJECT TO MULTIPLE ATTRIBUTE INPUT)
    6  =  APROJ       (MOSS MAP NAMES PROJECTION ASSIGNMENT)
    7  =  BROWZ       (MOSS MAP NAMES HEADER LISTING)
    8  =  PLOT.LEGEND (BUILD PLOTTER LEGEND FILE)
    9  =  MAKE.LOGO   (BUILD PLOTTER LOGO FILE)
   10  =  SUBEDIT     (MAP SUBJECT EDIT PROGRAM)
   11  =  SET.LEVEL   (BUILD POLYCELL TRANSLATION FILE)
   12  =  TRANSFORM   (TRANSFORM COORDINATES TO A PROJECTION)
   13  =  QUAD        (MAKE A QUAD MAP IN IMPORT/EXPORT FORMAT)
   14  =  DLG3        (USGS DLG ASCII TO MOSS)
   15  =  MAPIDX      (MAKE INDEX MAP OF PROJECT IN IMPORT/EXPORT FORMAT)
   16  =  XYSUBJECT   (REFORMAT POINT DATA TO MOSS)
   17  =  ATT2SUB     (ATTRIBUTE TO SUBJECT)
   : 1
```

```
   MOSS UTILITY SESSION COMPLETED


ENTER COMMAND ? BYE

   USER KEITH  EXITING MOSS
**** STOP
```

Appendix Exhibit 3 - RESEQUENCE OUTPUT

FUNCTION - Output file resulting from the RESEQUENCE program.

(Note: Due to the paper width limitation, each record wraps around to the next line.)

1
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335-20-16600-2741-3121   R   82   IDA4   K   ONTS

83
84
85
86
87
335-20-16600-2741   S-S-S-M   88
                                89 GEORGE RIVER   CH-CO-K-W   ONKE-ONKI-ONTS-PR
                                    IDA4
335-20-16600-2741   S-S-S-M   90 GEORGE RIVER   CH-CO-K-W   ONKE-ONKI-ONTS-PR
                                    IDA4
91
92
93
94
335-20-16600-2741   S-S-S-M   95 GEORGE RIVER   CH-CO-K-W   ONKE-ONKI-ONTS-PR
                                    IDA4
96
97
98
99
100
101
335-20-16600-2741   S-S-S-M   102 GEORGE RIVER   CH-CO-K-W   ONKE-ONKI-ONTS-PR
                                    IDA4
335-20-16600-2741   S-S-S-M   103 GEORGE RIVER   CH-CO-K-W   ONKE-ONKI-ONTS-PR
                                    IDA4
104
105
106
107
108
109
335-20-16600-2741   S-S-S-M   110 GEORGE RIVER   CH-CO-K-W   ONKE-ONKI-ONTS-PR
                                    IDA4
111
335-20-16600-2741   S-S-S-M   112 GEORGE RIVER   CH-CO-K-W   ONKE-ONKI-ONTS-PR

1

Line	Description	Part Number	Code		
113					
114					
115	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
116					
117	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
118		335-20-16600-2741-3107	R	K	ONTS
119	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
120					
121					
122	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
123		335-20-16600-2741-3107	R	K	ONTS
	IDA4				
124					
125					
126					
127	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
128					
129	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
130					
131					
132	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
133					
134					
135					
136		335-20-16600-2741-3101	R	K	ONTS
	IDA4				
137		335-20-16600-2741-3101	R	K	ONTS
	IDA4				
138	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
139		335-20-16600-2741-3101	R	K	ONTS
	IDA4				
140	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
141					
142					
143	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
144					
145					
146					
147	NORTH FORK GEORGE RIVER	335-20-16600-2741-3075	R	K	ONTS
	IDA4				
148		335-20-16600-2741-3075-4077	R	K	ONTS
	IDA4				
149					
150					
151	GEORGE RIVER	335-20-16600-2741	S-S-S-M	CH-CO-K-W	ONKE-ONKI-ONTS-PR
	IDA4				
152					
153					
154					

1

No.	Name				
155					
156	GEORGE RIVER	K	ONTS	R	335-20-16600-2741-3091
157	IDA4	K	ONTS	R	335-20-16600-2741-3091-4011
158	IDA4				
159					
160					
161		K	ONTS	R	335-20-16600-2741-3091
162	IDA4	K	ONTS	R	335-20-16600-2741-3091
163	IDA4				
164	GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR	S-S-S-M	335-20-16600-2741
165	IDA4				
166					
167					
168	GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR	S-S-S-M	335-20-16600-2741
169	GEORGE RIVER IDA4	CH-CO-K-W	ONKE-ONKI-ONTS-PR	S-S-S-M	335-20-16600-2741
170	IDA4				
171	GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR	S-S-S-M	335-20-16600-2741
172					
173					
174					
175					
176					
177					
178					
179					
180	GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR	S-S-S-M	335-20-16600-2741
181	NORTH FORK GEORGE RIVER IDA4	K	ONTS	R	335-20-16600-2741-3075
182	GEORGE RIVER IDA4	CH-CO-K-W	ONKE-ONKI-ONTS-PR	S-S-S-M	335-20-16600-2741
183					
184					
185	IDA4	K	ONTS	R	335-20-16600-2741-3075-4060
186					
187					
188	NORTH FORK GEORGE RIVER IDA4	K	ONTS	R	335-20-16600-2741-3075
189	IDA4	K	ONTS	R	335-20-16600-2741-3081-4020
190					
191					
192					
193					
194	NORTH FORK GEORGE RIVER IDA4	CH-K-W	ONKE-ONTS-PR	M-M-M	335-20-16600-2741-3075
195					
196					
197	NORTH FORK GEORGE RIVER IDA4	CH-K-W	ONKE-ONTS-PR	M-M-M	335-20-16600-2741-3075
198	GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR		335-20-16600-2741

1

#	Location			Part Number		
199						
200						
201						
202	IDA4		R	335-20-16600-2741-3081	K	ONTS
203						
204						
205	IDA4		R	335-20-16600-2741-3075-4054	K	ONTS
206	NORTH FORK GEORGE RIVER	IDA4	M-M-M	335-20-16600-2741-3075	CH-K-W	ONKE-ONTS-PR
207	NORTH FORK GEORGE RIVER	IDA4	M-M-M	335-20-16600-2741-3075	CH-K-W	ONKE-ONTS-PR
208	NORTH FORK GEORGE RIVER	IDA4	M-M-M	335-20-16600-2741-3075	CH-K-W	ONKE-ONTS-PR
209	GEORGE RIVER	IDA4	S-S-S-M	335-20-16600-2741	CH-CO-K-W	ONKE-ONKI-ONTS-PR
210						
211						
212	NORTH FORK GEORGE RIVER	IDA4	M-M-M	335-20-16600-2741-3075	CH-K-W	ONKE-ONTS-PR
213	GEORGE RIVER	IDA4	S-S-S-M	335-20-16600-2741	CH-CO-K-W	ONKE-ONKI-ONTS-PR
214						
215	IDA4		R	335-20-16600-2741-3081	K	ONTS
216						
217						
218						
219						
220	IDA4		R	335-20-16600-2741-3075-4065	K	ONTS
221	NORTH FORK GEORGE RIVER	IDA4	M-M-M	335-20-16600-2741-3075	CH-K-W	ONKE-ONTS-PR
222	IDA4		R	335-20-16600-2741-3081	K	ONTS
223						
224	GEORGE RIVER	IDA4	S-S-S-M	335-20-16600-2741	CH-CO-K-W	ONKE-ONKI-ONTS-PR
225						
226						
227	GEORGE RIVER	IDA4	S-S-S-M	335-20-16600-2741	CH-CO-K-W	ONKE-ONKI-ONTS-PR
228						
229						
230						
231	NORTH FORK GEORGE RIVER	IDA4	M-M-M	335-20-16600-2741-3075	CH-K-W	ONKE-ONTS-PR
232	NORTH FORK GEORGE RIVER	IDA4	M-M-M	335-20-16600-2741-3075	CH-K-W	ONKE-ONTS-PR
233	NORTH FORK GEORGE RIVER	IDA4	M-M-M	335-20-16600-2741-3075	CH-K-W	ONKE-ONTS-PR
234						
235						
236	IDA4		R	335-20-16600-2741-3075-4051	K	ONTS
237						
238						
239						

Map Code	Class	No. / Name	Type	Subtype
		241		
335-20-16600-2741	S-S-S-M	242 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		243 IDA4		
		244		
335-20-16600-2741	S-S-S-M	245 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		246 IDA4		
335-20-16600-2741-3075	M-M-M	247 NORTH FORK GEORGE RIVER	CH-K-W	ONKE-ONTS-PR
335-20-16600-2741	S-S-S-M	248 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		249 IDA4		
		250		
335-20-16600-2741	S-S-S-M	251 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		252 IDA4		
335-20-16600-2741	S-S-S-M	253 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
335-20-16600-2741	S-S-S-M	254 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
335-20-16600-2741-3070	R	255 IDA4	K	ONTS
		256		
		257		
335-20-16600-2741-3070	R	258 IDA4	K	ONTS
		259		
		260		
		261		
335-20-16600-2741	S-S-S-M	262 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		263 IDA4		
335-20-16600-2741	S-S-S-M	264 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
335-20-16600-2741	S-S-S-M	265 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
335-20-16600-2741	S-S-S-M	266 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
335-20-16600-2741	S-S-S-M	267 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		268 IDA4		
335-20-16600-2741-3075-4029	R	269 IDA4	K	ONTS
335-20-16600-2741	S-S-S-M	270 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		271 IDA4		
335-20-16600-2741-3070-4020	R	272 IDA4	K	ONTS
		273		
335-20-16600-2741-3075-4021	R	274 IDA4	K	ONTS
		275		
		276		
		277		
335-20-16600-2741	S-S-S-M	278 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		279 IDA4		
335-20-16600-2741-3060	R	279	K	ONTS
335-20-16600-2741	S-S-S-M	280 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		IDA4		

		281		
		282		
		283		
335-20-16600-2741	S-S-S-M	284 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		IDA4		
		285		
		286		
		287		
		288		
		289		
		290		
		291		
		292		
		293		
335-20-16600-2741	S-S-S-M	294 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		IDA4		
		295		
		296		
		297		
335-20-16600-2741	S-S-S-M	298 GEORGE RIVER	CH-CO-K-W	ONKE-ONKI-ONTS-PR
		IDA4		
		299		
		300		
		301		
		302		
		303		
		304		
		305		
		306		

Appendix Exhibit 4 – DESCRIBE COMO

FUNCTION – Defines the format of the MOSS multiple attribute file.

OK, MOSS AKHYDRO KEITH

                    MAP OVERLAY AND STATISTICAL SYSTEM
                    8908 32 BIT RELEASE W/9001 PATCH

        PRIMOS version 22.0.1.DOI / F77 Rev. T1.3-21.0 REQUIRED
          "NEWS" COMMAND PROVIDES CURRENT SYSTEM INFORMATION

          IF YOU HAVE ANY PROBLEMS, CALL YOUR STATE GIS OFFICE
          IN EMERGENCIES,   CALL THE GIS HOTLINE: (FTS) 776-0990
                                                  (303) 236-0990

AKHYDRO is a valid MOSS MASTER PROJECT.

          ****
          *   FIELD VERSION   *
          * 32 BIT MOSS FOR PRIMOS 22.1.DOI   *
          * Use only the 32 Bit 89.08 Manual   *
          *   *8908* 1/25/90   *
          ****
ENTER COMMAND ? UTIL

    ENTER MOSS UTILITY OPTION
        1 = TERMINATE UTILITY SESSION   [DEFAULT]
        2 = DATABTEST   (MOSS MAP NAMES SUPPORT)
        3 = ATTRIBUTE   (MOSS MULTIPLE ATTRIBUTE SUPPORT)
        4 = ATTDES   (BUILD MULTIPLE ATTRIBUTE DEFINITION FILE)
        5 = SUB2AT   (SUBJECT TO MULTIPLE ATTRIBUTE INPUT)
        6 = APROJ   (MOSS MAP NAMES PROJECTION ASSIGNMENT)
        7 = BROWZ   (MOSS MAP NAMES HEADER LISTING)
        8 = PLOT.LEGEND (BUILD PLOTTER LEGEND FILE)
        9 = MAKE.LOGO   (BUILD PLOTTER LOGO FILE)
       10 = SUBEDIT   (MAP SUBJECT EDIT PROGRAM)
       11 = SET.LEVEL   (BUILD POLYCELL TRANSLATION FILE)
       12 = TRANSFORM   (TRANSFORM COORDINATES TO A PROJECTION)
       13 = QUAD   (MAKE A QUAD MAP IN IMPORT/EXPORT FORMAT)
       14 = DLG3   (USGS DLG ASCII TO MOSS)
       15 = MAPIDX   (MAKE INDEX MAP OF PROJECT IN IMPORT/EXPORT FORMAT)
       16 = XYSUBJECT   (REFORMAT POINT DATA TO MOSS)
       17 = ATT2SUB   (ATTRIBUTE TO SUBJECT)
    : 4
                 *** ATTRIBUTE DESCRIPTION PROGRAM ***

What do you wish to call the Definition File

IDA4.DESC

 Provide a ten character description for "KEY"   1 [CR=Exit]

STREAM-COD

 Provide a 60 character description of this "KEY"

ALASKA ADF+G STREAM CODES

 The field type of this "KEY" is
  1 - Integer 2 - Floating point 3 - Character
Select:

3

What is the field length of this "KEY"?
47
 Attribute.   1   Key: STREAM-COD
 Description: ALASKA ADF+G STREAM CODES
 Type: CHARACTER   Length.   47

 Edit options: [0] - Proceed to next attribute (#   2)
                1 - Edit attribute KEY
                2 - Edit attribute DESCRIPTION
                3 - Edit field TYPE and LENGTH
                4 - QUIT
                5 - ABORT

 Select
 O

 Provide a ten character description for "KEY"   2 [CR=Exit]

USER-ID

 Provide a 60 character description of this "KEY"

ARC-INFO USER ID

 The field type of this "KEY" is
  1 - Integer 2 - Floating point 3 - Character
Select
3

 What is the field length of this "KEY"?
 4
 Attribute: 2   Key: USER-ID
 Description: ARC-INFO USER ID
 Type: CHARACTER   Length.   4

 Edit options: [0] - Proceed to next attribute (#   3)
                1 - Edit attribute KEY
                2 - Edit attribute DESCRIPTION
                3 - Edit field TYPE and LENGTH
                4 - QUIT
                5 - ABORT

 Select:
 O

 Provide a ten character description for "KEY"   3 [CR=Exit]

STREAM-NAM

 Provide a 60 character description of this "KEY"

STREAM NAME

 The field type of this "KEY" is
  1 - Integer 2 - Floating point 3 - Character
Select:

OK, MOSS AKHYDRO KEITH

3

 What is the field length of this "KEY"?
30
  Attribute.   3   Key: STREAM-NAM
  Description: STREAM NAME
  Type: CHARACTER   Length   30

 Edit options: [0] - Proceed to next attribute (#   4)
               1 - Edit attribute KEY
               2 - Edit attribute DESCRIPTION
               3 - Edit field TYPE and LENGTH
               4 - QUIT
               5 - ABORT

 Select.
O

 Provide a ten character description for "KEY"   4 [CR=Exit]

ADF+G SPEC

 Provide a 60 character description of this "KEY"

ALASKA DEPT. OF FISH AND GAME SPECIES ABBREVIATION

 The field type of this "KEY" is
   1 - Integer 2 - Floating point 3 - Character
Select:
3

 What is the field length of this "KEY"?
30
  Attribute.   4   Key: ADF+G-SPEC
  Description: ALASKA DEPT. OF FISH AND GAME SPECIES ABBREVIATION
  Type: CHARACTER   Length.   30

 Edit options: [0] - Proceed to next attribute (#   5)
               1 - Edit attribute KEY
               2 - Edit attribute DESCRIPTION
               3 - Edit field TYPE and LENGTH
               4 - QUIT
               5 - ABORT

 Select:
O

 Provide a ten character description for "KEY"   5 [CR=Exit]

BLM-SPECIE

 Provide a 60 character description of this "KEY"

BLM SPECIES ABBREVIATION

 The field type of this "KEY" is
   1 - Integer 2 - Floating point 3 - Character
Select:

3

```
  What is the field length of this "KEY"?
50
  Attribute:          5      Key:          BLM-SPECIE
  Description:  BLM SPECIES ABBREVIATION
  Type:        CHARACTER      Length:           50


  Edit options:   [0] - Proceed to next attribute (#    6)
                   1  - Edit attribute KEY
                   2  - Edit attribute DESCRIPTION
                   3  - Edit field TYPE and LENGTH
                   4  - QUIT
                   5  - ABORT

  Select:
0

  Provide a ten character description for "KEY"    6 [CR=Exit]
----------
USE-SPECIE

  Provide a 60 character description of this "KEY"
-----------------------------------------------------------
SPECIES USAGE OF THE STREAM

  The field type of this "KEY" is
   1 - Integer  2 - Floating point  3 - Character
Select:
3

  What is the field length of this "KEY"?
20
  Attribute:          6      Key:          USE-SPECIE
  Description:  SPECIES USAGE OF THE STREAM
  Type:        CHARACTER      Length:           20


  Edit options:   [0] - Proceed to next attribute (#    7)
                   1  - Edit attribute KEY
                   2  - Edit attribute DESCRIPTION
                   3  - Edit field TYPE and LENGTH
                   4  - QUIT
                   5  - ABORT

  Select:
0

  Provide a ten character description for "KEY"    7 [CR=Exit]
----------
QUAD-NAME

  Provide a 60 character description of this "KEY"
-----------------------------------------------------------
NAME OF THE MAP ON WHICH THE STREAM OCCURS

  The field type of this "KEY" is
   1 - Integer  2 - Floating point  3 - Character
Select:
```

OK, MOSS AKHYDRO KEITH

3

What is the field length of this "KEY"?
4
  Attribute.   7   Key: QUAD-NAME
  Description: NAME OF MAP ON WHICH THE STREAM OCCURS
  Type: CHARACTER   Length.   4

  Edit options: [0] - Proceed to next attribute (#   8)
                   1 - Edit attribute KEY
                   2 - Edit attribute DESCRIPTION
                   3 - Edit field TYPE and LENGTH
                   4 - QUIT
                   5 - ABORT

  Select:
4
**** STOP

  ENTER MOSS UTILITY OPTION
     1 =   TERMINATE UTILITY SESSION   [DEFAULT]
     2 =   DATABTEST   (MOSS MAP NAMES SUPPORT)
     3 =   ATTRIBUTE   (MOSS MULTIPLE ATTRIBUTE SUPPORT)
     4 =   ATTDES   (BUILD MULTIPLE ATTRIBUTE DEFINITION FILE)
     5 =   SUB2AT   (SUBJECT TO MULTIPLE ATTRIBUTE INPUT)
     6 =   APROJ   (MOSS MAP NAMES PROJECTION ASSIGNMENT)
     7 =   BROWZ   (MOSS MAP NAMES HEADER LISTING)
     8 =   PLOT.LEGEND (BUILD PLOTTER LEGEND FILE)
     9 =   MAKE.LOGO   (BUILD PLOTTER LOGO FILE)
    10 =   SUBEDIT   (MAP SUBJECT EDIT PROGRAM)
    11 =   SET.LEVEL   (BUILD POLYCELL TRANSLATION FILE)
    12 =   TRANSFORM   (TRANSFORM COORDINATES TO A PROJECTION)
    13 =   QUAD   (MAKE A QUAD MAP IN IMPORT/EXPORT FORMAT)
    14 =   DLG3   (USGS DLG ASCII TO MOSS)
    15 =   MAPIDX   (MAKE INDEX MAP OF PROJECT IN IMPORT/EXPORT FORMAT)
    16 =   XYSUBJECT   (REFORMAT POINT DATA TO MOSS)
    17 =   ATT2SUB   (ATTRIBUTE TO SUBJECT)
   . 1

    MOSS UTILITY SESSION COMPLETED

BYE
  USER KEITH EXITING MOSS

Appendix Exhibit 5 - .DESCRIBE FILE

FUNCTION - Lists results from the DESCRIBE program.

STREAM-COD
ALASKA ADF+G STREAM CODES
3
47
(T 1, A47)
1
USER-ID
ARC-INFO USER ID
3
 4
(T 48, A 4)
1
STREAM-NAM
STREAM NAME
3
30
(T 52, A30)
1
ADF+G-SPEC
ALASKA DEPT. OF FISH AND GAME SPECIES ABBREVIATION
3
30
(T 82, A30)
1
BLM-SPECIE
BLM SPECIES ABBREVIATION
3
50
(T112, A50)
1
USE-SPECIE
SPECIES USAGE OF THE STREAM
3
20
(T162, A20)
1
QUAD-NAME
NAME OF MAP ON WHICH THE STREAM OCCURS
3
 4
(T182, A 4)
2

Appendix Exhibit 6 - ADDATTRIBUTE COMO

FUNCTION - Creates the relationship between the MOSS map and the MOSS multiple attribute file necessary to access the descriptive information associated with the MOSS map items.

MOSS AKHYDRO KEITH

MAP OVERLAY AND STATISTICAL SYSTEM
8908 32 BIT RELEASE W/9001 PATCH

PRIMOS version 22.0.1.DOI / F77 Rev. T1.3-21.0 REQUIRED
"NEWS" COMMAND PROVIDES CURRENT SYSTEM INFORMATION

IF YOU HAVE ANY PROBLEMS, CALL YOUR STATE GIS OFFICE
IN EMERGENCIES, CALL THE GIS HOTLINE: (FTS) 776-0990
                                       (303) 236-0990

AKHYDRO is a valid MOSS MASTER PROJECT.

```
    *************************************
    *            FIELD VERSION          *
    *  32 BIT MOSS FOR PRIMOS  22.1.DOI *
    *  Use only the 32 Bit 89.08 Manual *
    *            *8908* 1/25/90          *
    *************************************
```
ENTER COMMAND ? UTIL

ENTER MOSS UTILITY OPTION
```
    1  =  TERMINATE UTILITY SESSION   [DEFAULT]
    2  =  DATABTEST    (MOSS MAP NAMES SUPPORT)
    3  =  ATTRIBUTE    (MOSS MULTIPLE ATTRIBUTE SUPPORT)
    4  =  ATTDES       (BUILD MULTIPLE ATTRIBUTE DEFINITION FILE)
    5  =  SUB2AT       (SUBJECT TO MULTIPLE ATTRIBUTE INPUT)
    6  =  APROJ        (MOSS MAP NAMES PROJECTION ASSIGNMENT)
    7  =  BROWZ        (MOSS MAP NAMES HEADER LISTING)
    8  =  PLOT.LEGEND  (BUILD PLOTTER LEGEND FILE)
    9  =  MAKE.LOGO    (BUILD PLOTTER LOGO FILE)
   10  =  SUBEDIT      (MAP SUBJECT EDIT PROGRAM)
   11  =  SET.LEVEL    (BUILD POLYCELL TRANSLATION FILE)
   12  =  TRANSFORM    (TRANSFORM COORDINATES TO A PROJECTION)
   13  =  QUAD         (MAKE A QUAD MAP IN IMPORT/EXPORT FORMAT)
   14  =  DLG3         (USGS DLG ASCII TO MOSS)
   15  =  MAPIDX       (MAKE INDEX MAP OF PROJECT IN IMPORT/EXPORT FORMAT)
   16  =  XYSUBJECT    (REFORMAT POINT DATA TO MOSS)
   17  =  ATT2SUB      (ATTRIBUTE TO SUBJECT)
 : 3
```

PLEASE ENTER MAP NAME
: IDA4
THE ATTRIBUTE FILE DID NOT OPEN CORRECTLY. CREATING IT.

THE NUMBER OF ATTRIBUTES IS   0
THE NUMBER OF ITEMS IS   306

PLEASE ENTER DESIRED OPTION
```
    1  =  EXIT   [DEFAULT]
    2  =  ADD A NEW ATTRIBUTE
    3  =  UPDATE AN EXISTING ATTRIBUTE
    4  =  CHANGE/DELETE KEY OR DESCRIPTOR
    5  =  LIST ATTRIBUTE FIELDS
    6  =  SEARCH AN ATTRIBUTE FIELD
    7  =  RESEQUENCE INPUT DATA FILE
    8  =  DELETE THE ATTRIBUTE FILE
```

: 2
WILL YOU BE USING A DEFINITION FILE? [CR = NO]
: Y
 ENTER THE NAME OF THE ATTRIBUTE DEFINTION FILE
IDA4.DESC
 PLEASE ENTER THE NAME OF THE INPUT DATA FILE
IDA4.FISH.RES

 THE NUMBER OF ATTRIBUTES IS   7
 THE NUMBER OF ITEMS IS   306

 PLEASE ENTER DESIRED OPTION
    1 = EXIT   [DEFAULT]
    2 = ADD A NEW ATTRIBUTE
    3 = UPDATE AN EXISTING ATTRIBUTE
    4 = CHANGE/DELETE KEY OR DESCRIPTOR
    5 = LIST ATTRIBUTE FIELDS
    6 = SEARCH AN ATTRIBUTE FIELD
    7 = RESEQUENCE INPUT DATA FILE
    8 = DELETE THE ATTRIBUTE FILE

Appendix Exhibit 7 - SAMPLE PLOT

FUNCTION - Sample plot of Iditarod A-4, showing anadromous streams utilized by King Salmon for migration, spawning and rearing, and non-anadromous streams.
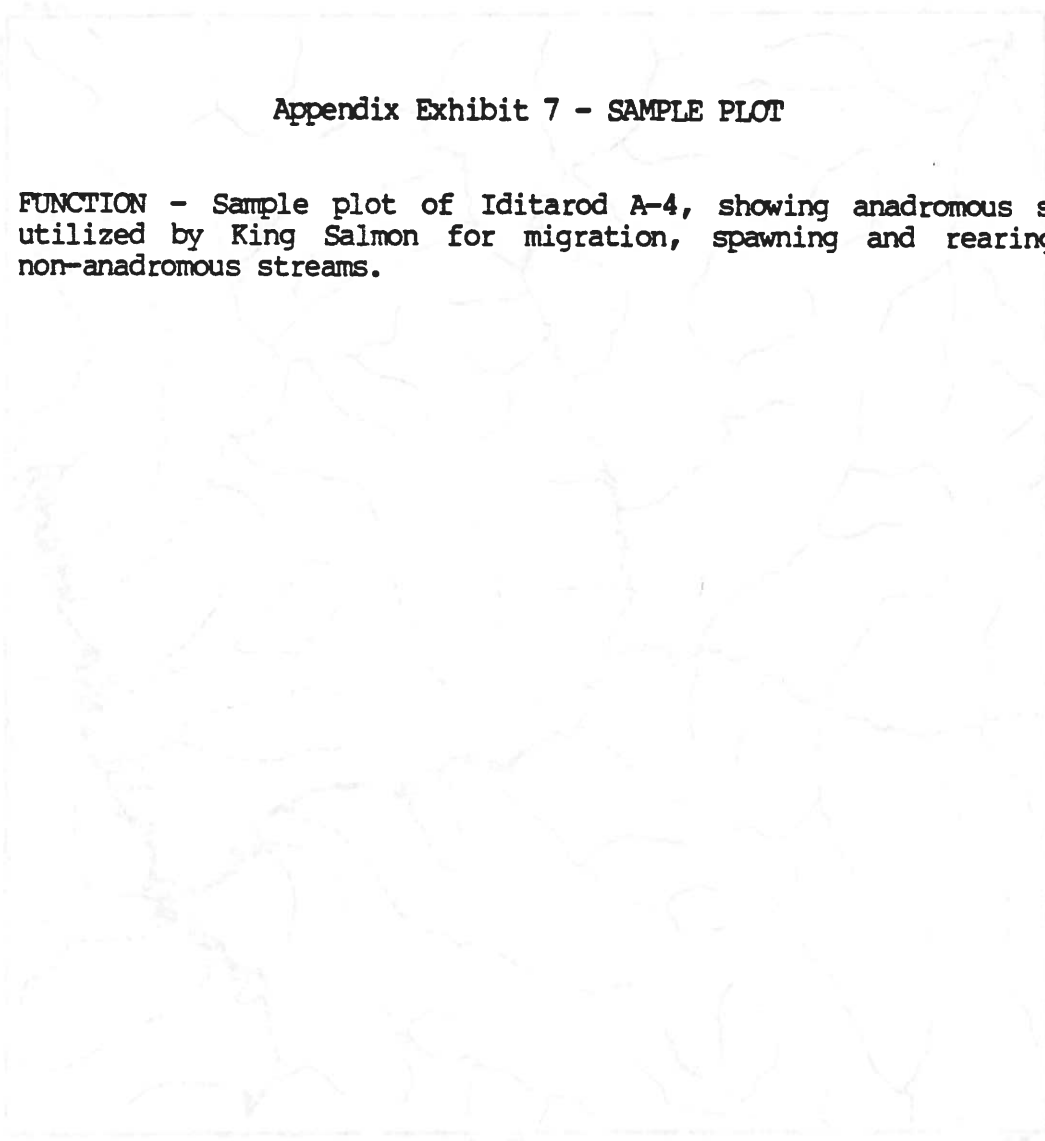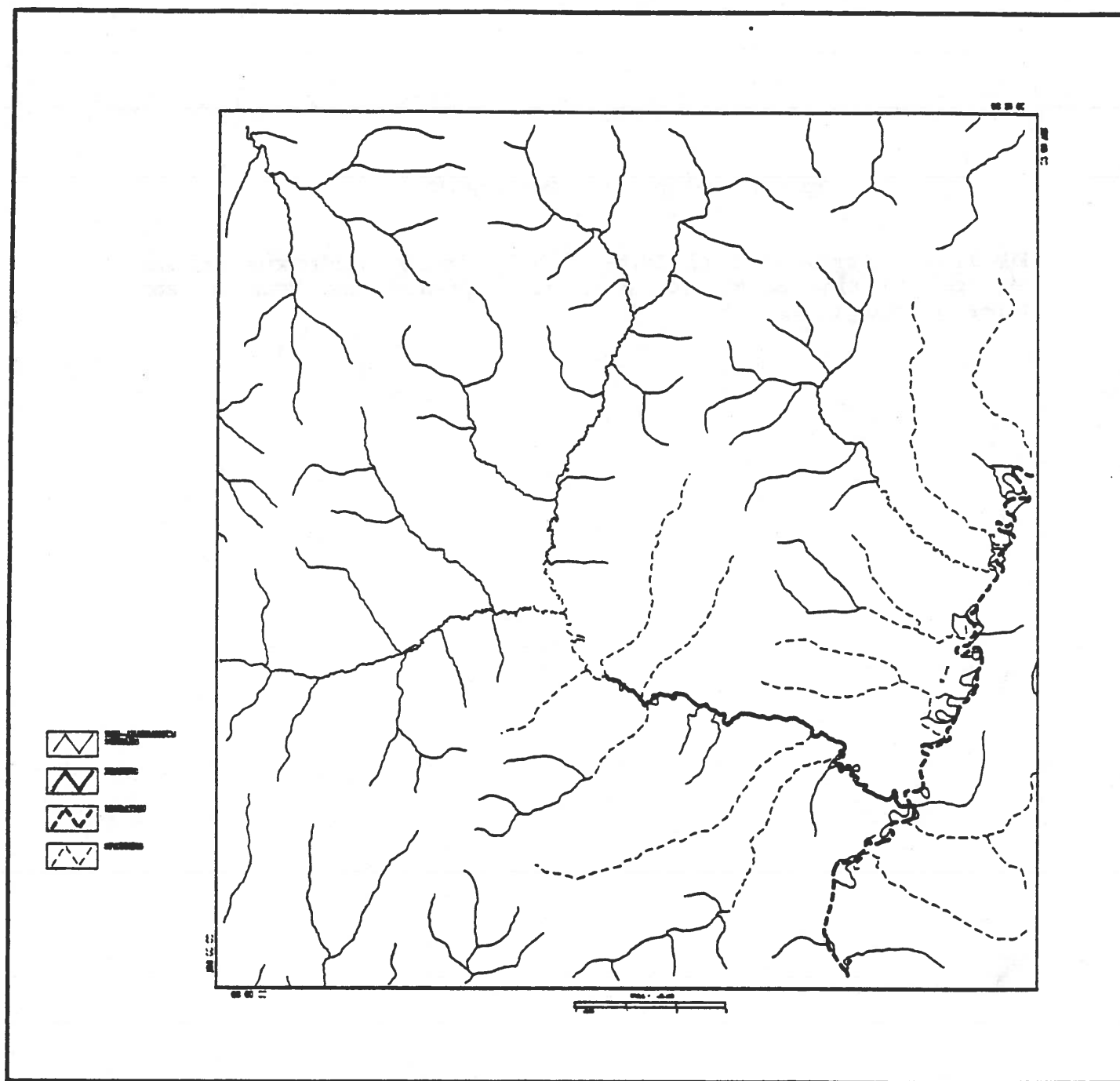
SPECIES USAGE FOR KING SALMON — IDITAROD A4, ALASKA