USDA

United States
Department of
Agriculture

Forest Service
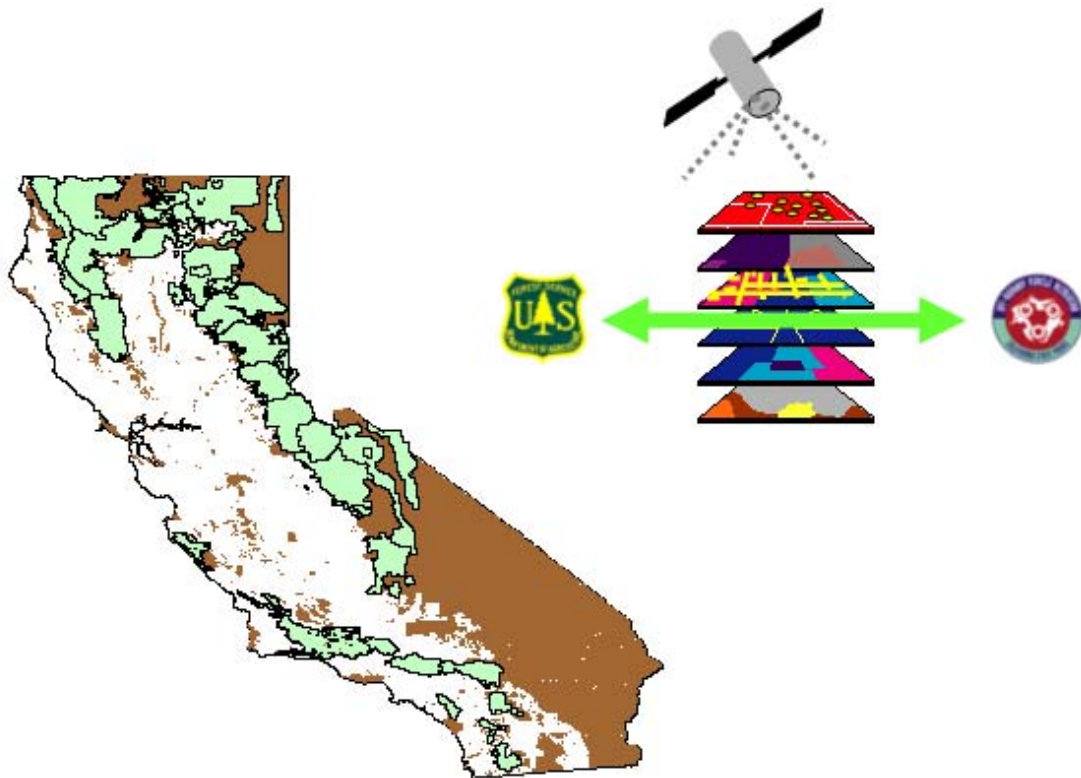
Pacific Southwest
Region

April 2004

**MOTORIZED TRAILS:
DATA COLLECTION STANDARDS
WITH
GLOBAL POSITIONING SYSTEMS (GPS)
AND
GEOGRAPHIC INFORMATION SYSTEM
(GIS) INTEGRATION**

2002-2003 OHV
MAPPING PROJECT

Table of Contents

Objectives

Overall Objective:

To develop an accurate and complete GPS and GIS inventory of unclassified roads, OHV trails (system and non-system), and OHV Off-Route use Areas. The roads and trails will be included in the Forest Transportation Atlas. The GIS layer will be displayed at 1:24,000 map scale with actual field locations located to national map accuracy standards (plus or minus 40 feet). The Transportation Atlas will be linked to the INFRA database. The collection of detailed information on non-system roads and trails is not a part of this project.

Secondary Benefits:

Once this accurate GIS depiction of a complete Forest OHV route system is established, it will aid in the assistance in road and trail decommissioning, and provide the basis for maps for Forest visitors. This process will lead to having a "Designated OHV" system on the Forest. There is Regional direction and support for this project (Refer to Regional Foresters letter dated 12/19/02). Core OHV trail files and Trail Management Objectives (TMO) will be updated or established for system trails. This will also clear up overlapping management of roads and trails, and provide a corporate database for OHV trails.

Tasks needing to be performed:

1. Gather and scrutinize forest and district information and data. This will consist of current GIS layers with current numbering. Visitor information maps, TMO forms, road management objectives, legacy trail files, INFRA trail files, Trail numbering data, Unclassified road data and forms.

2. Identify problems, gaps, inconsistencies, and conflicts. Examples of this would be missing trail segments, trail segments without an INFRA number and/or TMO, multiple GPS lines for one trail segment (spaghetti or linguini), closed or decommissioned roads that are currently being used as a trail route, Off route vehicle impact areas, etc…

3. Assign all trail segments with INFRA number and common name, establish TMO, and create base file for each.

4. Establish priorities for gathering of GPS data and who will do it.

5. GPS unclassified roads, system and non-system trails, & Off-Route use Areas.

6. Download and differentially correct and process GPS data.

7. Convert GPS data files to ARC info coverage files.

8. Deliver coverage files to GIS lab.

9. GIS processes data into an ARC/INFO coverage and plots data on Forest Quad Maps.

10. Process GIS spatial data from the files: create routes for specific trails and populate fields in the INFRA tables associated with Travel Routes.

11. Print Map.

12. Compile all generated maps in a central database. This will be accomplished by transmitting the completed files to the RO OHV program managers.

Arc/Info Coverage (GIS)

After GPS post processing has been completed it will be necessary to combine all alignments into a single forest wide ArcInfo coverage. On the following page is the structure of the arc attribute table (.aat) for the coverage (TRAVEL ROUTES; NATIONAL DATA DICTIONARY ROADS; INFRASTRUCTURE APPLICATION, v1.2 January,2002). . It is recommended that rather than calling the new coverage 'travel_route' the use of <forest designator>gps<mmddyy> (i.e. "sqfgps120102") be used until the coverage data is combined to the forest's official Infra Travel Route coverage

Noted here is also an ITEM called 'SOURCE_CODE' that should be populated with the appropriate code.

At this point the coverage is not 'routed.' Using methodology outlined in the INFRA Spatial Data Preparation (SDP) documentation, this coverage can then be compared to other known data sets and background information for validation and editing in Spatial Data Interface (SDI). SDI is an ArcInfo application that is widely used to assist with the construction and maintenance of the spatial data in Travel Routes. GPS collected data may be the most reliable way to maintain National Map Accuracy Standards for your route system. Other tools include paper manuscripts (Forest Road Atlas), and imagery.

Coverage Name:	travel_route
Map Scale:	1:24,000 for continental U.S., Puerto Rico, and Hawaii and 1:63,360 for Alaska
Horizontal Accuracy:	Meet National Map Accuracy Standards
Projection, Datum, etc:	A complete Arc/Info projection file is required

Table 0-1 contains the structure of the arc attribute table for the coverage. There are three user-defined items RTE_NO, TRL_NO and SOURCE_CODE. These items were not specified in the GIS Core Data Dictionary but it's highly recommended that they be included. The RTE_NO and TRL_NO should be included for usage with SDI and to maintain a safety net in case the route system(s) get corrupted. It also allows forests to maintain only arcs and dynamically builds the route systems. The SOURCE_CODE item is optional and can be used to track where the line work came from. The coding for the SOURCE_CODE is contained in Table 0-2.

Table 0-1. travel_route.aat, Arc Attribute Table for the travel_route Coverage

Col	Item Name	Width	Output	Type	Dec	Alt Name	Index	Description
1	FNODE#	4	5	B				Internal Item
5	TNODE#	4	5	B				Internal Item
9	LPOLY#	4	5	B				Internal Item
13	RPOLY#	4	5	B				Internal Item
17	LENGTH	4	12	F	3			Internal Item
21	TRAVEL_ROUTE#	4	5	B				Internal Item
25	TRAVEL_ROUTE-ID	4	5	B				Internal Item
29	RTE_NO	30	30	C		ROUTE_NO	Yes	Road Number – same as ID in the RTE_BASICS table. If a route functions as both a road and trail, then both the RTE_NO and TRL_NO should be populated.
59	TRL_NO	30	30	C		TRAIL_NO	Yes	Trail Number – same as ID in the RTE_BASICS table. If a route functions as both a road and trail, then both the RTE_NO and TRL_NO should be populated.
89	SOURCE_CODE	2	2	C				Code for the source of the geographic position of the arc. This item is NOT mandatory but can be used for internal control. Reference: EM-7140-24 Guidelines for Digital Map Updates

Table 0-2. Source Code Definition for Arc Attribute Table [8]

Code	Description
01	Cartographic Feature File
02	Global Positioning; 2-5 meter accuracy; 3D lock
03	Global Positioning; 2-5 meter accuracy; 2D lock
04	Global Positioning; <1 meter accuracy; survey grade
05	Resurvey Plat
06	Compiled from aerial photography
07	Digitized from Primary Base Series or Second Edition Quad
08	Digitized from Orthophotography
09	Automated Lands Project
20	Digitized from some other source
21	Geodetic Control Database (GCDB)
22	Other Cadastral Information
23	Another agency created the line work
24	Unknown

GPS Trails & Roads Data Collection Specifications

(Adapted from FSH 2409.12 TIMBER CRUISING HANDBOOK, WO AMENDMENT 2409.12-2000-4, EFFECTIVE 04/20/2000)

52.2 - Global Positioning System (GPS)

GPS is a system utilizing signals transmitted from satellites to determine the coordinate location (x,y,z) of points on the ground. When points are linked together sequentially, they form a line. When these points are located on the perimeter of a closed traverse they form a polygon, and its area can be calculated.

52.21 - GPS Positioning Standards

The following standards apply to GPS point features, line features and area features.

1. All crew members using the GPS equipment for resource data collection shall be trained in its use. It is important that users have a basic understanding of how GPS works before collecting field data.

2. All positional fixes shall be differentially corrected using a reference/base station that is no farther than 500 kilometers (300 miles) away. Position fixes collected by the (rover) GPS receiver shall be collected under the following conditions:

    Introduction: These recommended procedures are intended to help achieve a consistent standard of accuracy in trail feature locations.

    a. Current Accuracy Standard: The National standard for a mapped feature on a 1:24,000 scale map is $\pm$ 40 feet. The following procedures are intended to guarantee this level of accuracy or better.

    b. Current GPS standards in effect: Standards for timber sale harvest unit mapping have been in effect for many years. These standards are intended to produce very accurate area determinations for sale cruise volumes and values. Due to the nature and use of the data to be collected in connection with this project, a more relaxed set of standards may be used. The standards contained herein have been modified to some degree, in order to reflect the nature of OHV trails data and ease collection.

    c. Recommended receiver configuration for trail mapping: The following table contains receiver settings for obtaining accurate trail feature data.

Logging mode	3D manual
PDOP mask	8.0
SNR mask	3.0
Elevation mask	12°
Minimum satellites	4
Logging intervals:	

Points	1 second
Lines	5 seconds
Minimum # of positions For point features	30

d. or the manufacturer's recommended level for good data quality under poor conditions.

Standard: Excellent conditions   PDOP Mask   4.0

             SNR Mask   6.0

             Elevation Mask   15 degrees

    Poorest Conditions PDOP Mask   20.0

             SNR Mask   2.0

             Elevation Mask   5 degrees

3. The reference/base station shall be of a third order (or better), NAD 83 datum position.

4. For point positioning (a single geographic point used to reference other attribute data), each point shall be occupied for a minimum of 30 positions shall be collected. These positions shall be differentially corrected and averaged to obtain one final geographic position for the point.

5. For offsets, the field operator shall note the horizontal distance and the azimuth to the point to be determined. Where the slope to the offset point is greater than 5%, the vertical angle shall also be noted. Only horizontal distances shall be used when computing offsets. The maximum offset is 50 meters.

6. Only 3-D positions that are differentially corrected will be used for referencing attribute data, and for entry into GIS databases. A computer display of such positions should show a random splatter of positions, which when averaged yield the most probable final position.

7. For lines and polygons to be collected, position fixes shall be collected while moving around the perimeter and shall be collected at a time interval that will accurately define the perimeter of the traverse. A 3 second interval is suggested for a walk file, however if moving more rapidly a 2 or 1 second interval may be appropriate. However, data should not be collected using an interval of greater than 5 seconds. Loss of position fixes (signal) for a short duration while moving in a straight line is acceptable, however position fixes must be received while moving through all turning points in order to portray the true representation of the traverse.

8. Only 3-D positions that are differentially corrected will be used for area determination, and for entry into GIS databases. A computer display or plot of the file should show positional fixes lying one after another in a relative sequential pattern, defining the perimeter of the traverse. There should be only

slight irregularities (jumping from side to side) of positional fixes. If some of these are outliers (do not represent the traverse) they should be edited from the file. The person who collected the data shall review a computer display or large-scale plot of the data (1:15,840). It shall be reviewed for the following:

    a. Consistency of data collection (look for a smooth string of fixes).

    b. Large spacing between points. Large spacing would indicate loss of signal and the possibility of missing positional fixes at critical turning points that would define the traverse.

    c. The polygon should resemble the traverse walked in the field.
       At this time if the reviewer is confident that the data collected meets the above standards, an area calculation can be performed, if needed, and the data may be accepted for inclusion in the database.

9. If the established standards are not met, it will be necessary to recollect the data. Data for a portion of a traverse or for a large traverse may be collected at different dates and times as long as it is collected while moving in the same direction as the original traverse.

10. Conversion to GIS-compatible format: After data has been differentially corrected, and edited to remove outliers, the final file shall be exported to an ESRI Arc Info coverage file, for transfer to the Forest Service GIS. The data in the final coverage files provided for the use of the Forest Service shall be in Universal Transfer Mercator coordinates, of the appropriate zone North American Datum of 1927 (NAD27). Units shall be meters. Files shall be furnished on a CD. A designated GIS contact for each National Forest shall determine whether the data is acceptable.

11. In cases where a complete, continuous data set has been collected, the location of features as depicted by GPS positions shall be used as the final location of features in the GIS coverage.

12. In cases where a data set is incomplete or contains a large number of outliers due to poor GPS conditions, but is determined to be usable, the final location of features shall be developed in the following manner:

    a. The file shall be added to a GIS project; along with any appropriate background coverage's available. These could be scanned and registered USGS quads, or Forest Service Primary Base Series maps, Digital Ortho photography, or forest coverage's such as streams, roads, contours, or other data that would help indicate the most probable location of a feature.

    b. Using the GPS data and the background coverage(s) as a guide, a GIS specialist shall digitize a new feature into the GIS layer.

    c. Once the new feature has been drawn, the attributes of the original GPS feature shall be copied into the corresponding files for the new feature.

    d. Only the drawn feature shall be retained in the final coverage: the original GPS data shall be removed.

Definitions

Road: A motor vehicle travel way over 50 inches wide, unless designated and managed as a trail. A road may be classified, unclassified, or temporary.

Road or Trail: Two track or single track routes that shows evidence of regular and continuous use over a period of time. The route is further characterized by absence of perennial vegetation, broken or crushed vegetation, or where vegetation does exist, there are wheel track depressions in the ground. Routes must possess these characteristics for the continuous length to be considered a road or a trail. The road or trail must exceed 200 feet in length for purposes of data capture.

System Trail (Motorized): Trail on National Forest System lands managed as part of the transportation facility. These "trails" may be either single track trails (12"-18"), ATV trails (Greater than single track < 50") or OHV/Jeep Trails (> than 50" but managed as a trail). These trails receive scheduled maintenance and management, and are part of the INFRA corporate database.

Single Track Trail: A travel way less than 24" wide.

Two-Track Trails: A travel way created by a vehicle with 2 parallel tires. (This includes all standard street legal vehicles, modified off-road vehicles (both 2 and 4 wheel drive) and vehicles less than 50 inches.

Non-system Trail (Motorized): Trails less than 50 inches wide that are not part of the transportation system as defined above. They have been created by various means but have received repeated vehicular use. There is no evidence of formal maintenance (users may provide a limited degree of maintenance to keep the trail open).

Unclassified Road: Roads on National Forest System lands that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travel ways, and off-road vehicle tracks and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1, FSM 7705-Transportation System). (Defined as a travel way greater than 50 inches wide, have not been designated and managed as a trail, these roads shall be incorporated into the INFRA database.)

OHV Off-Route use Area: An area containing wheel tracks caused by off-highway vehicle use that has occurred in a manner that has affected, damaged, and/or destroyed vegetation. Areas inventoried will be 1/8th acre or greater in size.

Road and Trail Numbering:

Each road and trail will be numbered starting with the two initials of the individual GPSing the route and then followed by ascending numbers. (For example, RW1, TY23, LK102).

Use a numbering scheme to uniquely identify each surveyed road and trail that does not have a route number provided by the Government. (See data dictionary.)

Rte_no: (Route Number) the Road Number which allows forest to maintain arcs and dynamically build route systems.

Seg_ID: GPS surveyor's unique number for segment based on surveyor's initials, sequence and mile post.

Beginning_Termini: A description of where the route begins (i.e. county road 319 or milepost along county road 319)

Ending_Termini: A description of where the route ends (i.e. county road 49 or milepost along county road 49 as in the case of a loop)

Jurisdiction: Displays ownership of land

- BIA: Bureau of Indian Affairs
- BLM: Bureau of Land Management
- FS: Forest Service
- UNK: Unknown at time of field data collection

Trail Width

- **Less than 24 inches wide:** Single track
- **Between 24 and 50 inches wide:** All-Terrain Vehicle/Quads etc.
- **Greater than 50 inches:** Defined as a road although may be managed as a trail.

Surface Material: Type of material predominantly covering the trail surface.

- **Natural:** Native surface. No obvious improvements through the use of aggregates, paving, oils, chemicals or other materials applied to the surface.
- **Gravel:** Surface has been improved through the application of crushed rock, gravel, or other aggregate.
- **Paved:** The surface has been improved through the use of pavement, concrete, or other materials.
- **Other:** The surface has been improved through the use of material other than pavement or gravel.
- **Comments**

Mechanically Altered:

- **NO:** There is no obvious evidence this road or trail was created or maintained by a piece of equipment.
- **YES:** Evidence trails or road has been created and/or is maintained by a piece of equipment.

Resource Concerns:

- Tread over 15%: for more than 200 continuous feet.
- Any tread over 25%
- Gulling and Ruts: Over 2 square feet in cross section or extending into the upper two-thirds of the trail grade. (State OHV Soil Conservation Guidelines)

Multiple Travel Ways: One than one travel way (can be 2-track 4WD) across a riparian area or two travel ways over 100 feet in length in ANY non-riparian areas.

Transportation Feature:

Feature Type

- **Bridge:** Self explanatory-can be made of any material type.

- **Cattle Guard:** Wood or Metal construction.

- **Gate:** Self-explanatory. Can be made of any material type.

- **Live Water Crossing:** A crossing containing water that must be driven through.

- **Staging Area:** An open area used for unloading and loading off-highway vehicles.

- **Camp Site:** An area obviously used for overnight camping. Evidence of past use present (i.e. rock fire rings etc.)

- **Dry Water Crossing:** A crossing with no water present.

Use_area

- Free text

Undetermined: At time of field data collection the requested data can not be determined. Will require additional verification.

Nonmotorized Other: No visual use by wheeled vehicles. Example hiking trails

Data Dictionary vs. 03_01

The following definitions are part of this work order specifications:

Data Dictionary to be used.

"OHV_ROUTE", line, "", 3, seconds, Code

  "ID", text, 30, normal, normal, Label1

  "NAME", text, 30, normal, normal

  "SEG_LENGTH", numeric, 3, 0.010, 1000.000, 1.000, required, required

  "JURISDICTION", menu, normal, normal

    "BIA"

    "BLM"

    "FS", default

    "UNK"

  "Route Type"

    "ROAD"

    "TRAIL"

    "UNDETERMINED"

  "ROUTE CLASS", menu, required, normal

    "Newly Discovered", default

    "Developed Non-System"

    "System"

    "Planned Decommission"

  "OBSERVED_USE", menu, normal, normal, Label2

    "MOTORCYCLE"

    "ATV", default

    "4WD"

    "NOT USED"

    "UNDETERMINED"

  "TREAD_WIDTH", menu, normal, normal

    "24_INCH"

    "24-50_INCH"

    "OVER_50_INCH"

  "DRIVABILITY_CLASS", menu, normal, normal

    "2WD", default

    "4WD TOURING"

    "4WD TECHNICAL"

    "ATV"

    "MOTORCYCLE"

    "BICYCLE"

    "NONMOTORIZED OTHER"

  "SURFACE_MATERIAL", menu, normal, normal

    "NATURAL", default

    "GRAVEL"

    "PAVED"

    "OTHER"

  "MECHANICALLY_ALTERED", menu, normal, normal

    "NO", default

    "YES"

  "WATERBARS", menu, required, normal

    "No", default

    "Yes"

  "SLOPE", menu, required, "Greater than 15% slope", normal

    "Less than 15%", default

    "Greater than 15%"

"TRANSPORT_FEATURE", point, "", 1, seconds, 30, Code

  "FEATURE_TYPE", menu, normal, normal, Label1

    "BRIDGE"

    "CATTLE GAURD"

    "CULVERT"

    "GATE"

    "LIVE WATER CROSSING"

    "STAGING AREA"

    "CAMP SITE"

"MANAGEMENT_CONCERN", point, "", 1, seconds, 30, Code

  "DESCRIPTION", text, 100, normal, normal, Label1

"SIGN", point, "", 1, seconds, 30, Code
  "SIGN_TYPE", menu, normal, normal, Label1
    "REGULATORY", default
    "WARNING"
    "SAFETY"
    "DIRECTIONAL"
    "TRAFFIC CONTROL"
    "INFORMATIONAL"
    "IDENTIFICATION"
  "CONDITION", menu, normal, normal, Label2
    "GOOD", default
    "DETERIORATED"
    "DAMAGED"
    "MISSING OR DOWN"
    "OBSOLETE"
  "SIGN_MESSAGE", text, 100, normal, normal

"USE_AREA", area, "", 3, seconds, Code
  "USE_TYPE", menu, normal, normal, Label1
    "OHV USE (VARIED)"
    "MOTORCYCLE USE"
    "ATV USE"
    "4WD USE"
    "UNDETERMINED"
  "CAMPGROUND", menu, normal, normal, Label2
    "NO", default
    "YES"

"Switchback", point, "", 1, seconds, 30, Code

"Erosion", point, "", 1, seconds, 30, Code
  "Length", menu, required, "Length of erosion", normal, Label1

"0' to 10' length", default

"10' to 50'"

"Greater than 50'"

===   Fields required by this project

===   Fields optional by this project

Additional fields may be negotiated with the RO and the individual Forest but such negotiations will be in advance of actual implementation of work.

GPS Off-Highway Vehicle Use Mapping Standards and Guidelines

For the purpose of this work, a road or trail that:

REQUIRES MAPPING is defined as any of the following or combinations of the following that exceeds 200 feet in length:

1. A clearly evident linear two tracks or single track travel way that evidences repeated use by motorized vehicles. Visual evidence of wheel tracks is not required.

2. A linear travel way that is either devoid of vegetation or the fact that existing grasses or shrubs are trampled by repeated traffic. This vegetation is characterized by broken off blades of grass or branches as opposed to merely bent over.

3. A linear travel way that is clearly being developed because of repeated driving over duff. The duff is crushed, evidenced by depression, needle brake up, and is deteriorating to the point of becoming powder. It is not essential that bare ground be visible yet.

4. A linear travel way where the soil is depressed by repeated vehicular use.

5. Lateral movement of soils caused by the centrifugal force of rotating wheels along the travel way.

Linear Features That Are Not Mapped:
1. Areas of disturbance caused by vehicles backing around at the end of an otherwise drivable road or trail. However, if the area is not a backing spot but rather a travel way over 200 feet long created by users for the purpose of turning around it is mapped. These routes are typically the large "drive around the big clump of trees" associated with dispersed camping. This area may also qualify for a 1/8 area disturbed area.

2. Short (defined, as being under 100 linear feet) travel ways created to straighten out an already existing trail or road. This includes shortcutting a turn, driving around seasonal muddy areas and turn widening (increasing the radius of a turn.). However if longer than 200 feet they are mapped.

3. Areas where a single vehicle was stuck in the mud or sand. In such cases there is resource damage but there is no evidence of additional vehicle traffic or mud-bogging play activities.

4. One-time tracks caused by a vehicle traversing a muddy area are not mapped. However if additional vehicles are now following this travel way, even thought it is dry, it constitutes a new off-highway travel way and needs to be mapped.

Off-Route Use Area
For the purpose of this work, an Off-Route OHV Use Area that **requires mapping** is defined as any of the following or combinations of the following that exceeds 1/8th of an acre size. These are mapped as a polygon.

1. For Reference: An area of 1/8th of an acre is 5,445 square feet. This is represented by a box approximately 74 feet on each side, a rectangle approx 20 feet by 270 feet, (or 30'x180' or 50x110') and a circle approximately 83 feet in diameter (42 foot radius)

2. A traverse will be run around the perimeter of all single disturbed areas over 1/8th acre in size. This includes parking areas, hill climbs, dispersed camping sites, picnic areas, illegal dumping sites and all other user created disturbed areas.

3. Where there are more than one disturbed area larger than 1/8th acre that are adjacent to one another a traverse will be run around the outer extremity of the multiple areas.

4. For the purpose of mapping polygons "adjacent" means another disturbed area within sight of but not further than 200 feet from the edge of another disturbed area.

5. It is understood that combining disturbed areas will cause undisturbed areas to be included in the polygon. A comment in the data dictionary will indicate an estimated percentage of the polygon that is actually disturbed. For example if there are three areas 1/8 ac, ¼ ac. And ½ acres in size adjacent to one another the polygon drawn around them might indicate the acreage to be 2.0 acres. By field observation it appears that only about 50% of this polygon is disturbed therefore in the comments section it would state 50% disturbed. The unit recorded is the percentage disturbed, NOT the acreage.

6. In combining multiple disturbed areas, the perimeter should include all areas even less than 1/8th acre, if they are adjacent to or visible to areas of 1/8th acre or more. An isolated area less then 1/8th acre would not normally be mapped. However, when it is adjacent (visual and within 200 feet) of another single or multiple disturbed area (s) then the perimeter is extended out to include it in the polygon. As in example #3 above, a note is inserted indicating approximately how much of the gross polygon actual contains disturbed areas.

7. Areas that have a central "road" or "Trail" running through or adjacent to them are mapped as both a line and a polygon. An example might be where a central road through a meadow gets wet and users are creating multiple routes to get around it. The original trail is mapped as a linear feature AND a polygon is also created around the perimeter. REMEMBER, these are recorded only as a route if the length is over 200 feet long but is mapped as a polygon if there are multiple routes where the area between the routes is disturbs and the area is over 1/8th acre in size.
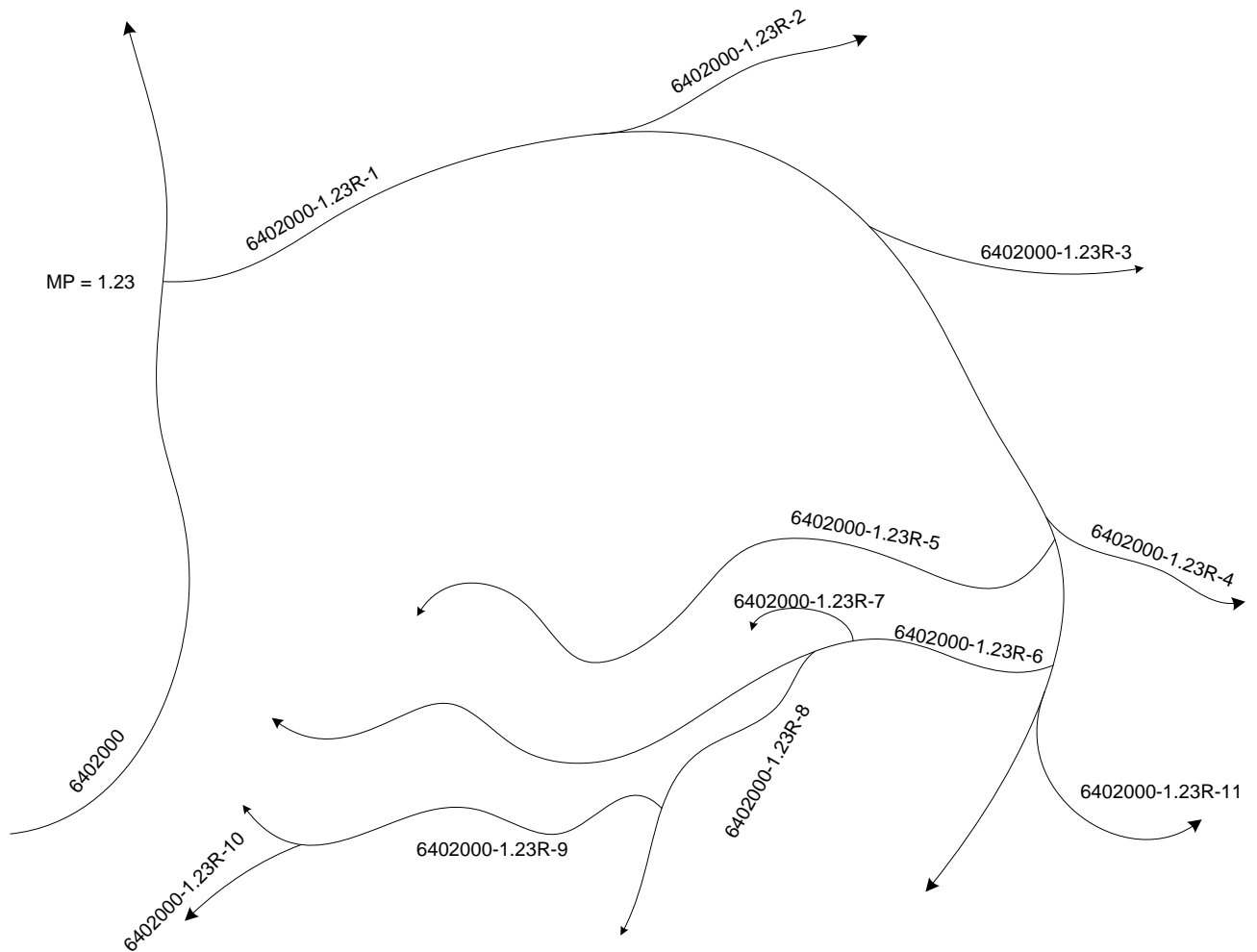
What Is Not Mapped As A Polygon:

1. Single disturbed sites less than 1/8th acre in size and not within 200 lineal feet of another disturbed area.

2. In an area where there are pods of damage but none of them individually are over 1/8th acre in size and you cannot see another disturbed area due to vegetation or topography then the area need not be mapped.

NOTE: The point to be made here is that of "user psychology". If the public can see where others have gone they too will want to, and in reality end up going there. So the visual component is significant and should always be taken into consideration.

3. Developed sites that appear on public maps such as campgrounds, picnic areas, boat launching ramps, OHV staging areas and similar designated and constructed features.

4. Any areas identified and documented by the agency in pre-work meetings.

MP = 1.23

6402000-1.23R-1

6402000-1.23R-2

6402000-1.23R-3

6402000-1.23R-4

6402000-1.23R-5

6402000-1.23R-6

6402000-1.23R-7

6402000-1.23R-8

6402000-1.23R-9

6402000-1.23R-10

6402000-1.23R-11

6402000

Road number may be assigned as follows:

Parent#+MP+Direction+Sequence Number separated by a hyphen

A road that comes off of route 2808032 at mp 1.23 and goes right
(in direction of increasing measure) would be 2808032-1.23R-1

APPENDIX

Regional Forester Letter

File Code: 2350-5   Date: December 19, 2002

Route To: (7700)

Subject: OHV Designated Routes and Forest Orders

To: Forest Supervisors

OPTIONAL REPLY DUE FEBRUARY 7, 2003

Enclosed are notes from the presentation of the "Designated OHV Routes and Forest Orders Strategy Team Report" by John Shilling at the November 7th Regional Leadership Forum. The enclosed amended strategy including the "5-step pyramid" is adopted with the exception of completion dates in items 2 & 3, which will be tailored to each Forest. Our goal is to complete the route inventories by December 2004 and achieve a fully managed system of roads and trails, including designation of OHV routes by January 2006. This is consistent with the National budget (BFES) direction in 2004. The Director of Recreation will monitor Forests and issue reports to me on progress toward these goals.

Please direct any comments or questions to Rich Farrington at (707) 562-8849.

/s/ Kent P. Connaughton (for)

JACK A. BLACKWELL

Regional Forester

cc: Rich Farrington, John Shilling, Mel Teigen, Bill Fodge, Gary Lybrand, Kathy Mick, Jayne Handley, Bob Simmons, OGC, pdl r5 rec officers, pdl r5 forest engineers, pdl r5 gis coordinators, Kathy Clement, David Diaz, Sue Danner, Diana Craig

Designated OHV Routes & Forest Orders Strategy Team Report

Presentation to the RLF, November 7, 2002

Goal – Consistency in OHV management across the Region

Issues

- Forest Orders
- Designation of OHV roads, trails and limited use areas
- Inventory & mapping

Background – Kent Connaughton and Rich Farrington briefed the Regional Leadership Forum in April on the need for a consistent approach to designating OHV roads, trails and limited use areas and issuing Forest Orders for enforcement.

Compelling Reasons

- Lawsuits
- OHV impacts & conflicts in Urban Interface Areas & Fuel Treatment Zones
- Implement Forest Plan Direction
- Comply with existing direction (E.O. 11644 as amended, 36 CFR 295, & FSM 2355 & 7711, Road Policy, and Action Plan for Chief's OHV review in 1989, & National Recreation Agenda)
- Comply with ESA, NHPA, Clean Water Act, and BMP's
- 2004 National Budget Direction: "Designating a system of roads, trails, and areas appropriate for OHV"
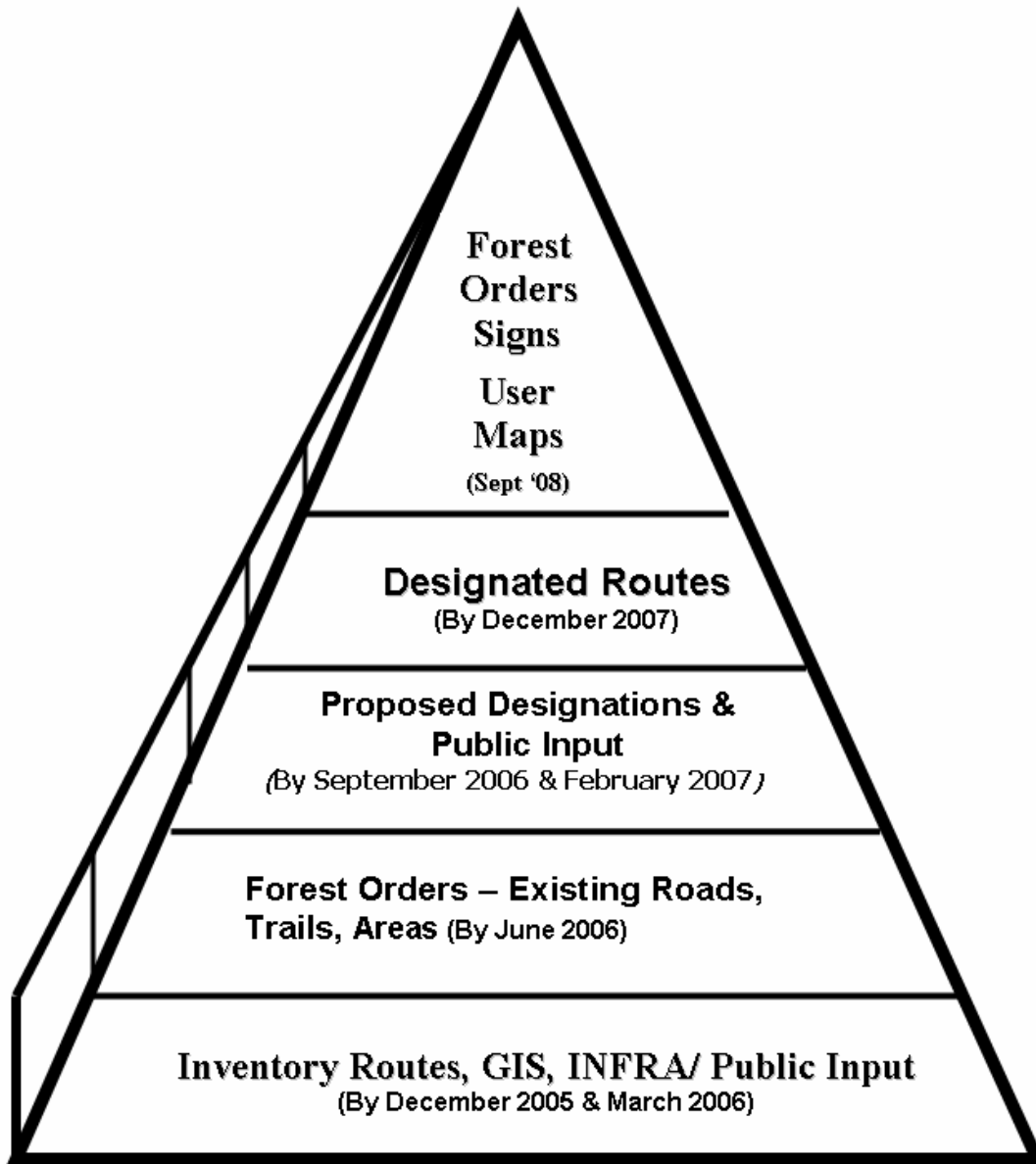
Agreed Upon Actions

1) Have a managed system of roads and trails by 2006. Forest Supervisors shall decide on whether to add unclassified roads and non-system trails to the "system" or decommission them. It may take some Forests longer to reach this goal than others. Forest Plan revisions shall identify as a goal: "Develop a fully managed system of roads and trails."

2) Map unclassified roads, non-system trails, and off route impact areas (preferably by GPS & GIS) in the next 2 years – 50% by 12/2003. 100% by 12/2004 (ties with FY 2004 National Budget Direction).

3) Designate all OHV routes within 3 years -- by 12/2005 at a rate of 33% per year (ties with FY 2004 National Budget Direction).

4) Develop a brief Regional ("How to") Guidebook on mapping, inventory, designation, and Forest Orders, including the "Eldorado process" by June 2003.

5) Earmark and distribute funding for mapping, inventory, resource surveys, analysis, public involvement, designation of OHV routes, and preparation of Forest Orders beginning in FY 2003. As a minimum, each Forest shall provide appropriated funds on a $1 per $3 of State OHV funds as available.

6) Forest Plan Revisions will contain programmatic direction to prohibit wheeled vehicles off of designated roads, trails, and limited OHV use areas consistent with direction in FSM 2355.04d (2) and 36 CFR 295 (Do not be site-specific per Jack Blackwell; this is programmatic direction).

7) Forest Supervisors will initiate pilot inventories of OHV routes by June 2003 to enable issuance of interim Forest Orders to prohibit wheeled vehicles off of roads; trails and limited OHV use areas.

8) Forest Supervisors will conduct and document annual reviews of OHV management relative to Forest LRMP and project plan direction as required in FSM 2355.5, FSM 2355.03 (7), FSM 2355.04d (2), FSM 2355.04d (4), and 36 CFR 295.6, requiring as a minimum, review of route designations and Forest Orders.

9) Issue Forest Orders and Regional Regulations (36 CFR 261) to enforce OHV restrictions.

OHV Route Designation Strategy

Forest
Orders
Signs

User
Maps

(Sept '08)

Designated Routes
(By December 2007)

Proposed Designations &
Public Input
(By September 2006 & February 2007)

Forest Orders – Existing Roads,
Trails, Areas (By June 2006)

Inventory Routes, GIS, INFRA/ Public Input
(By December 2005 & March 2006)
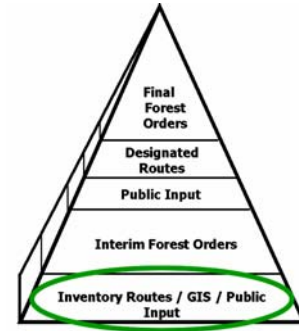
Work Flow Model

The WORK FLOW MODEL is a general graphic flow chart depicting the numerous tasks and processes involved within the First Stage of the OHV Route Designation Strategy graphic. The Work Flow Model is Forest and 'Agreement' dependant. Some of these tasks will be done consecutively, repeated, modified and added for clarification.

Task 1 (Office)
    Initial meeting with Forest and the RO. Identify resource needs.
    (Coordination Meeting)

Task 2 (Office)
    GPS Data Dictionary is updated to assist Forest needs as appropriate. Integration with GIS database.
    (GIS and Infra group working with GPS data).

Task 3 (Office)
    Contractor(s) meeting with the Forest and the RO. Sign the contract.
    (Coordination Meeting)

Task 4 (Office)
    Decide which areas will be targeted for data collection on a given day. Task is performed prior to data collection.
    (GPS data collection)

Task 5 (Office)
    (FINAL) Data Dictionary creation / integration with GIS database Task is performed prior to data collection.
    (GIS and Infra group working with GPS data)

Task 6 (Office)
    Check satellite availability. Task is performed prior to data collection.
    (GPS data collection).

Task 7 (Office or Field)
    Configure GPS receivers.
    (GPS data collection)

Task 8 (Field)
    Test run of data collection.
    (GPS data collection)

Task 9 (Field)
    Data collection.
    (GPS data collection)

Task 10 (Office)
    Data download, post processing.
    (GIS and Infra group working with GPS data)

Task 11 (Office)
    Export to GIS format. Integrate spatial data into GIS. Integrate tabular data into Infra.
    (GIS and Infra group)

Task 12 (Office)
>   Revisions (procedural or database). Review and edit tabular and spatial data.
>   (GIS and Infra group working with GPS data)

Task 13 (Office)
>   Route and link data.
>   (GIS and Infra group working with GPS data)

Task 14 (Office)
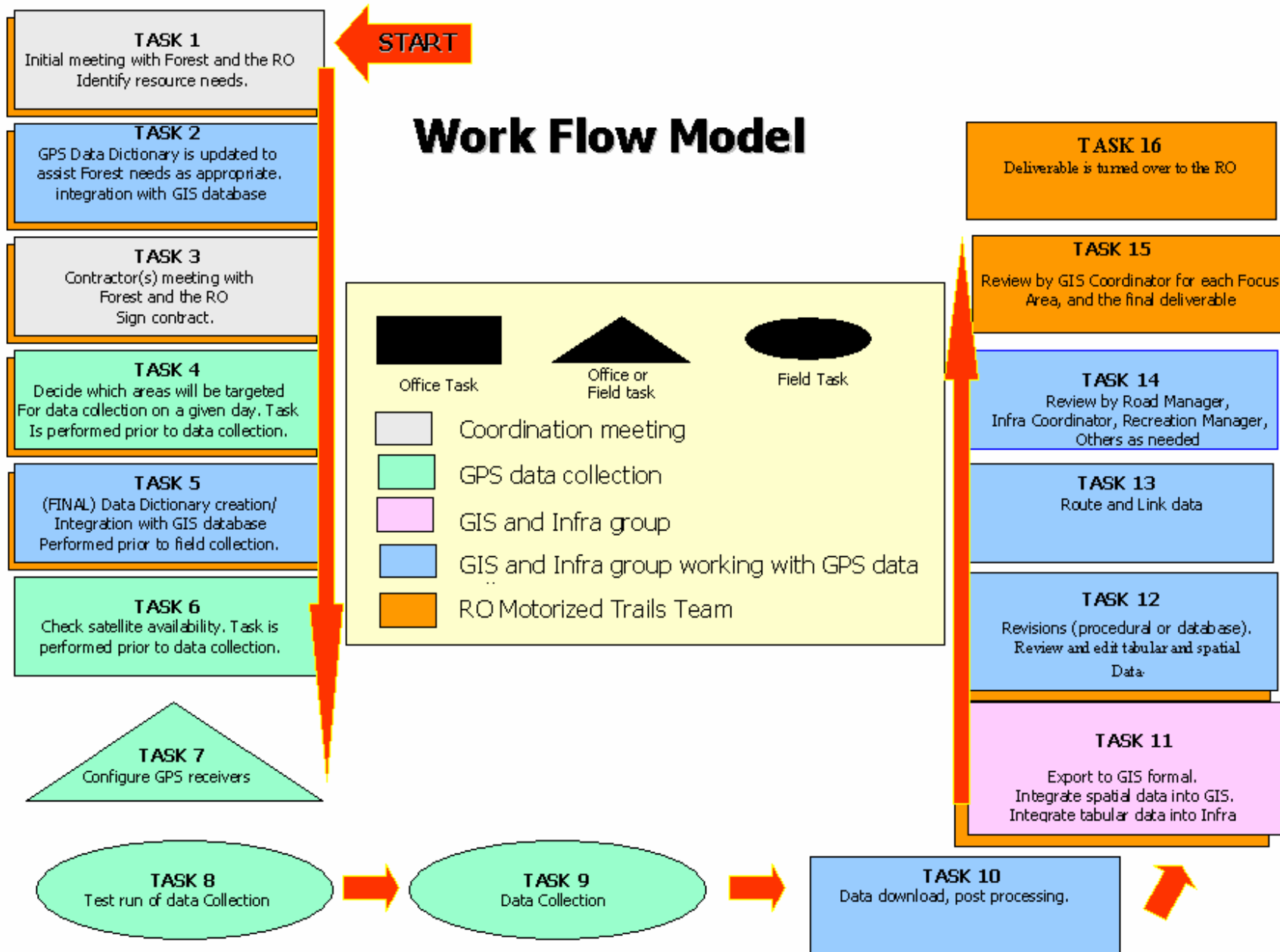>   Review by Road Manager, Infra Coordinator, Recreation Manager, others as
>   needed.
>   (GIS and Infra group working with GPS data)

Task 15 (Office)
>   Review by GIS coordinator for each Focus Area, and the final deliverable.
>   (RO Motorized Trails Team)

Task 16 (Office)
>   Deliverable is turned over to the RO.
>   (RO Motorized Trails Team)

Work Flow Model

TASK 1
Initial meeting with Forest and the RO
Identify resource needs.

START

TASK 2
GPS Data Dictionary is updated to assist Forest needs as appropriate. integration with GIS database

TASK 3
Contractor(s) meeting with Forest and the RO Sign contract.

TASK 4
Decide which areas will be targeted For data collection on a given day. Task Is performed prior to data collection.

TASK 5
(FINAL) Data Dictionary creation/ Integration with GIS database Performed prior to field collection.

TASK 6
Check satellite availability. Task is performed prior to data collection.

TASK 7
Configure GPS receivers

TASK 8
Test run of data Collection

TASK 9
Data Collection

TASK 10
Data download, post processing.

Office Task

Office or Field task

Field Task

Coordination meeting

GPS data collection

GIS and Infra group

GIS and Infra group working with GPS data

RO Motorized Trails Team

TASK 16
Deliverable is turned over to the RO

TASK 15
Review by GIS Coordinator for each Focus Area, and the final deliverable

TASK 14
Review by Road Manager, Infra Coordinator, Recreation Manager, Others as needed

TASK 13
Route and Link data

TASK 12
Revisions (procedural or database). Review and edit tabular and spatial Data

TASK 11
Export to GIS formal. Integrate spatial data into GIS. Integrate tabular data into Infra

References to Infra Use for Roads

FSM 7712.14

> *2. Inventories at Watershed and Area Scale. At these scales, a comprehensive and complete inventory of all classified, unclassified, and temporary roads is required in order to conduct analyses that inform site-specific decisions, to set priorities for road management actions, and to identify special situations.*

Use the Infra database to store the physical attributes on all classified and unclassified roads. FSM 7712.14, exhibit 01, entitled Road Inventory Necessary at Various Scales of Road Analysis, illustrates the roads analysis objectives and the inventory data to be collected at various scales. (The exhibit states: "Watershed Scale – unclassified roads – physical attributes: The minimum inventory information is location, length, condition, and any associated environmental or public safety risks or impacts.")

FSM 7711.03

> *2. Maintaining the Transportation Atlas. Maintain a current record of forest transportation facilities in the atlas. Use the ongoing real property and condition survey updates (FSM 6446) as appropriate. Use the Forest Service Infrastructure (Infra) database for the storage and analysis of information in the transportation atlas.*

FSM 7711.1

> *1. The forest road atlas is a key component of the transportation atlas and, consistent with the road inventory, includes all classified and unclassified roads on National Forest System lands.*

> *2. The road atlas includes, at a minimum, the location, jurisdiction, and road management objectives for classified roads and bridges and the location of unclassified roads and any management actions taken to change the status of unclassified roads.*

In the Travel Routes Data Dictionary, Version 1.2, see Chapter 7, Coding Scenarios. Check out scenarios #1 and #7. Also see Chapter 8, Special Situations, Section 8.1, Roads Policy Initiative and Unclassified Roads. There's a good flowchart on p.8.2.