GPS Glossary
Adapted from http://www.garmin.com/aboutGPS/glossary.html

2D Operating Mode - A two-dimensional GPS position fix that includes only horizontal coordinates (no GPS elevation). It requires a minimum of three visible satellites.

3D Operating Mode - A three-dimensional GPS position fix that includes horizontal coordinates, plus elevation. It requires a minimum of four visible satellites.

Accuracy - A measure of how close an estimate of a GPS position is to the true location.

Acquisition Time -The time it takes a GPS receiver to acquire satellite signals and determine the initial position.

Active Leg - The segment of a route currently being traveled. A "segment" is that portion of a route between any two waypoints in the route.

Altimeter - An instrument for determining elevation, especially an aneroid barometer used in aircraft that senses pressure changes accompanying changes in altitude.

Analog Signal - The principal feature of analog signals is that they are continuous. In contrast, digital signals consist of values measured at discrete intervals.

Azimuth - The horizontal direction from one point on the earth to another, measured clockwise in degrees (0-360) from a north or south reference line. An azimuth is also called a bearing.

Bearing - The compass direction from a position to a destination, measured to the nearest degree (also call an azimuth). In a GPS receiver, bearing usually refers to the direction to a waypoint.

Control Segment - A worldwide chain of monitoring and control stations that control and manage the GPS satellite constellation.

Coordinates -A set of numbers that describes your location on or above the earth. Coordinates are typically based on latitude/longitude lines of reference or a global/regional grid projection (e.g., UTM, MGRS, Maidenhead).

Course - The direction from the beginning landmark of a course to its destination (measured in degrees, radians, or mils), or the direction from a route waypoint to the next waypoint in the route segment.

Datum - A math model which depicts a part of the surface of the earth. Latitude and longitude lines on a paper map are referenced to a specific map datum. The map datum selected on a GPS receiver needs to match the datum listed on the corresponding paper map in order for position readings to match.

Desired Track (DTK) - The compass course between the "from" and "to" waypoints.

Differential GPS (DGPS) - An extension of the GPS system that uses land-based radio beacons to transmit position corrections to GPS receivers. DGPS reduces the effect of selective availability, propagation delay, etc. and can improve position accuracy to better than 10 meters.

Dilution Of Precision (DOP) - A measure of the GPS receiver/satellite geometry. A low DOP value indicates better relative geometry and higher corresponding accuracy. The DOP indicators are GDOP (geometric DOP), PDOP (position DOP), HDOP (horizontal DOP), VDOP (vertical DOP), and TDOP (time clock offset).

Distance - The length (in feet, meters, miles, etc.) between two waypoints or from your current position to a destination waypoint. This length can be measured in straight-line (rhumb line) or great-circle (over the earth) terms. GPS normally uses great circle calculations for distance and desired track.

DOD - The United States Department of Defense. The DOD manages and controls the Global Positioning System.

Elevation -The distance above or below mean sea level.

Ellipsoid - A geometric surface, all of whose plane sections are either ellipses or circles.

Estimated Position Error (EPE) - A measurement of horizontal position error in feet or meters based upon a variety of factors including DOP and satellite signal quality.

Estimated Time Enroute (ETE) -The time it will take to reach your destination (in hours/minutes or minutes/seconds) based upon your present position, speed, and course.

Estimated Time Of Arrival (ETA) -The estimated time you will arrive at a destination.

Frequency - The number of repetitions per unit time of a complete waveform, as of a radio wave (see L1 and L2 frequencies in this glossary).

Geocaching - A high-tech version of hide-and-seek. Geocachers seek out hidden treasures utilizing GPS coordinates posted on the Internet by those hiding the cache.

Geographic Information System (GIS) -A computer system or software capable of assembling, storing, manipulating, and displaying geographically referenced information (i.e., data identified according to their location). In practical use, GIS often refers to the computer system, software, and the data collection equipment, personnel, and actual data.

Global Positioning System (GPS) -A global navigation system based on 24 or more satellites orbiting the earth at an altitude of 12,000 statue miles and providing very precise, worldwide positioning and navigation information 24 hours a day, in any weather. Also called the NAVSTAR system. States' GPS system.

GoTo - A route consisting of one leg, with your present position being the start of the route and a single defined waypoint as the destination.

Greenwich Mean Time (GMT) - The mean solar time for Greenwich, England, which is located on the Prime Meridian (zero longitude). Based on the rotation of the earth, GMT is used as the basis for calculating standard time throughout most of the world.

Grid - A pattern of regularly spaced horizontal and vertical lines forming square zones on a map used as a reference for establishing points. Grid examples are UTM, MGRS, and Maidenhead.

Heading - The direction in which a vehicle is moving. For air and sea operations, this may differ from actual Course Over Ground (COG) due to winds, currents, etc.

Input/Output (I/O) - The two-way transfer of GPS information with another device, such as a nav plotter, autopilot, or another GPS unit.

Initialization - The first time a GPS receiver orients itself to its current location and collects almanac data. After initialization has occurred, the receiver remembers its location and acquires a position more quickly because it knows which satellites to look for.

Latitude - A position's distance north or south of the equator, measured by degrees from zero to 90. One minute of latitude equals one nautical mile.

Leg (Route) - A portion of a route consisting of a starting (from) waypoint and a destination (to) waypoint. A route that is comprised of waypoints A, B, C, and D would contain three legs. The route legs would be from A to B, from B to C, and from C to D.

Longitude -The distance east or west of the prime meridian (measured in degrees). The prime meridian runs from the north to south pole through Greenwich, England.

Magnetic North - Represents the direction of the north magnetic pole from the observer's position. The direction a compass points.

Magnetic Variation - In navigation, at a given place and time, the horizontal angle (or difference) between true north and magnetic north. Magnetic variation is measured east or west of true north.

Multipath Error - An error caused when a satellite signal reaches the GPS receiver antenna by more than one path. Usually caused by one or more paths being bounced or reflected. The TV equivalent of multipath is "ghosting."

Navigation - The act of determining the course or heading of movement. This movement could be for a plane, ship, automobile, person on foot, or any other similar means.

Position - An exact, unique location based on a geographic coordinate system.

Position Fix - The GPS receiver's computed position coordinates.

Position Format - The way in which the GPS receiver's position will be displayed on the screen. Commonly displayed as latitude/longitude in degrees and minutes, with options for degrees, minutes and seconds, degrees only, or one of several grid formats.

Prime Meridian - The zero meridian, used as a reference line from which longitude east and west is measured. It passes through Greenwich, England.

Route - A group of waypoints entered into the GPS receiver in the sequence you desire to navigate them.

Selective Availability (SA) -The random error, which the government can intentionally add to GPS signals, so that their accuracy for civilian use is degraded. SA is not currently in use.

Space Segment - The satellite portion of the complete GPS system.

Track (TRK) - Your current direction of travel relative to a ground position (same as Course Over Ground).

Track Log – Allows you to

Triangulation - A method of determining the location of an unknown point, as in GPS navigation, by using the laws of plane trigonometry.

True North - The direction of the north pole from your current position. Magnetic compasses indicate north differently due to the variation between true north and magnetic north. A GPS receiver can display headings referenced to true north or magnetic north.

Universal Transverse Mercator (UTM) – A nearly worldwide coordinate projection system using north and east distance measurements from reference point(s). UTM is the primary coordinate system used on U.S. Geological Survey topographic maps.

User Interface -The way in which information is exchanged between the GPS receiver and the user. This takes place through the screen display and buttons on the unit.

User Segment - The segment of the complete GPS system that includes the GPS receiver and operator.

Wavelength - The distance between points of corresponding phase of two consecutive cycles of a wave.

Waypoints - Waypoints are locations or landmarks worth recording and storing in your GPS. These are locations you may later want to return to. They may be check points on a route or significant ground features. (e.g., camp, the truck, a fork in a trail, or a favorite fishing spot). Waypoints may be defined and stored in the unit manually by taking coordinates for the waypoint from a map or other reference. This can be done before ever leaving home. Or more usually, waypoints may be entered directly by taking a reading with the unit at the location itself, giving it a name, and then saving the point. Waypoints may also be put into the unit by referencing another waypoint already stored, giving the reference waypoint, and

entering the distance and compass bearing to the new waypoint.

Wide Area Augmentation System (WAAS) - A system of satellites and ground stations that provide GPS signal corrections for better position accuracy. A WAAS-capable receiver can give you a position accuracy of better than three meters, 95 percent of the time. (At this time, the system is still in the development stage and is not fully operational.) WAAS consists of approximately 25 ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations, located on either coast, collect data from the reference stations and create a GPS correction message.