

Water Rescue Search Guidelines

#	Title of Information / Guideline	Page
1	INITIAL SEARCH CONSIDERATIONS	2
2	SEARCH TECHNIQUES	3
3	SEARCH URGENCY CHART	4
4	INFORMATION GIVEN TO SEARCHERS	5
5	LOST PERSON BEHAVIOR AND PROFILE	6
6	LOST PERSON INTERVIEW STRATEGY	9
7	LOST PERSON DATA	10
8	DETECTION PROBABILITY FOR SWEEP SEARCH CONDITIONS	16
9	THEORY OF SEARCH PROBABILITIES	17
10	PROBABITLIY OF AREA - POA	18
11	GUIDELINES FOR SURFACE WATER-BASED SEARCH OPERATIONS	19

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Information Sheet #1

TOPIC: INITIAL SEARCH CONSIDERATIONS

INTRODUCTION: Overview of initial search techniques and decisions.

General

Determine Urgency – Use Worksheet on Info Sheet 3
Confine Search Area Early – Limit Area that Needs to Be Searched
Resources – Early Notification of Needed Outside Resources
Outside Experts, Agencies, Media, ...
“Welfare Check” – Law Enforcement Check on Victim at Home

Gather Information

Interview Witnesses and Local Experts – Use Info Sheets 6 and 7
Profile Subject – Use Info Sheet 5
Secure and Mark Point Last Seen (PLS) and Locations Where Clues Are Found
Collect Relevant Maps / Other Relevant Info – Tides, Weather, Water Flow, ...
Past History of Area – Previous Searches, Known Problems / Events / Hazards

Establish / Control Search Boundaries – Know if Subject Leaves Area

Determine Outer Boundary – 3 mph Walk Speed for Adult, Water Current Speed
Consider Natural Boundaries Cliffs, Thick Underbrush, Rivers, ...
Use Manmade – Roads, Power Lines, String Line (Put Up By Searchers), ...
Post Lookouts / Spotters – Line of Sight Boundary
Road Block / Trail Block – Drive or Block Roads / Patrol Trails / Camp-ins
Check Natural Lines of Entry / Exit (Footprints of Victim Shoes?)

Subdivide Search Area Into Segments

Well Defined – Use Natural Features, Easily Mapped / Located Areas
Manageable Segments – Size of Area Can Be Searched By Crew In One Shift
Assign Probability of Area (POA) to Each Segment – Info Sheet 10

Establish Searching Techniques – Consider Safety / Limitation of Capabilities

Passive / Active Search Techniques – Info Sheet 2
Assign Probability of Detection (POD) to Search in Area – Info Sheet 8, 9
Create Information Sheet to Give to Searchers – Use Info Sheet 4

Re-evaluate Search Strategy When

Conditions Change in Search Area – Weather, Time Passage, ...
Clue Found Linked to Subject – Narrow and Focus Search
Absence of Clues – May Indicate Subject Not in or Wasn't In Area
Additional Information Gathered

Information Sheet #2

TOPIC: SEARCH TECHNIQUES

INTRODUCTION: Overview of some of the techniques of searching.

Most Efficient Initial Tactics – Typically Largest Payoff Using Early Resources
Binary, Hasty, Confinement, Attraction Search Techniques As Soon As Possible
Use Trackers / Dogs Early If Available

Binary – Search Cutting Across Perimeter Of Search Area
Determine If Subject Did (or Did Not) Travel In / Across Particular Area or Strip
Trackers, Dogs and / Or Hasty Team Best Suited

Passive Search – Attract Subject to Known Point or Area
Sight (Fire, Smoke, Lights, Aircraft) Sound – Sirens, Air Horn, Megaphone
String Line – Position at Search Segment Boundaries Leading to Fixed Site
Post Signs in Likely / Easily Seen Locations

Hasty Search – Quick Search Once Know What Looking For (Emphasis on Speed)
Small Group – At Least 2 Trained Rescuers (“Clue Conscious”)
Reconnaissance of General Area – Likely Spots, Hazards, Info for Command
Begins as Soon as Possible from Point Last Seen or Start at Likely Locations
Area May Be Hasty Searched Multiple Times
Go Towards Most Likely Areas (Highest Probability of Find Clue or Person)

Sweep Searching – Method of Search Varies Depending on Subject (Info Sheet 7)
Specific to Area Slower Search in Pattern (Pattern Depends on Circumstance)
Emphasis May Be on Thoroughness – Miss Nothing or Search Efficiency

Water Search – Do With Minimal Exposure to Rescuers (SCUBA – Last Resort)
Above Water – Boats, Swimmers With River Boards, Water Bikes
Look / Probe Below Water – Diving Mask and Put Face in Water or Poles
Lower Water Level If Able (Have Dam Turn Off Gates), Wait for Tide

Air Search – Pilot or Observer Reports Area Conditions As Well As Look for Subject
FLIR – Forward Looking Infrared
Video Camera on RPV – Remotely Piloted Vehicle

Dog Search – Best Times are Early Morning, Late Afternoon
Air Scent – High Probability for Clearing Area / Finding Subject
Tracking - Establish Known Position, Possible Direction of Travel

Visual Tracking – Establish Known Position, Travel Direction, ...

Information Sheet #3

TOPIC: SEARCH URGENCY CHART

INTRODUCTION: Planning Tool for Determining Urgency of Search.

Subject Profile	RATING
Age	
Very Young.....	1 _____
Very Old.....	1 _____
Other.....	2-3 _____
Medical Condition	
Known or Suspected Injured, Ill, or Mental Problem.....	1-2 _____
Healthy.....	3 _____
Known Fatality.....	3 _____
Number of Subjects	
One Alone.....	1 _____
More Than One (Unless Separation Suspected).....	2-3 _____
Weather Profile	
Past and / or Existing Hazardous Weather.....	1 _____
Predicted Hazardous Weather, (8 hrs or Less).....	1-2 _____
Predicted Hazardous Weather, (More than 8 hrs).....	2 _____
No Hazardous Weather Predicted.....	3 _____
Subject Experience Profile	
Not Experienced, Does Not Know Area.....	1 _____
Not Experienced, Knows Area.....	1-2 _____
Experienced, Not Familiar With Area.....	2 _____
Experienced, Knows Area.....	3 _____
Equipment Profile	
Inadequate for Environment and Weather.....	1 _____
Questionable for Environment and Weather.....	1-2 _____
Adequate for Environment and Weather.....	3 _____
Terrain and Hazards Profile	
Known Hazardous Terrain and Other Hazards.....	1 _____
Few or No Hazards.....	2-3 _____

If any of the 7 Categories Above Are Rated as a 1, Regardless of the Total, the Search Could Require an Emergency Response **TOTAL** _____

Response Level: 7-11 Emergency 12-16 Measured 17-21 Evaluate & Investigate

Information Sheet #4

TOPIC: INFORMATION GIVEN TO SEARCHERS

INTRODUCTION: Description of some of the data required by all searchers.

Name to Call – Subjects Name, Nickname. Children May Have Special Needs

Physical Description

Height	Weight	Eye Color	Sex
Skin Color	Hair Color	Age	

Clothing Description - Color, Type, Brand

Jacket	Shirt	Coat	Pants
Socks	Shoes	Hat	Other

Shoe Print Description – Obtain Same Brand and Size Shoe

Photocopy of Tread – Imprint on Aluminum Foil or Photocopy Shoe

Equipment Description – Especially Items That Are Easily Discarded**Brands of Cigarettes, Gum, Candy, Food,...****Weather Forecast**

Sunrise and Set Times	High and Low Temperature
Moon Rise and Set Times	Expected Precipitation
Wind Speed and Direction	Cloud Cover
Moisture	

Assigned Terrain Features

Hazards	Elevation and Topo Features
Tides / Water Current	Vegetation Density

Information Sheet #5

TOPIC: LOST PERSON BEHAVIOR AND PROFILE

INTRODUCTION: Data Associated with categories of lost people.

General Information Relevant to Prediction of Lost Subject Behavior

Category and Circumstances of Loss

Terrain – Travel Distance Estimation, Barriers, Drainage, Trails, ...

Weather – Restrict Subjects Movements, Search Time Criticalness

Personality – Aggressive vs Ponderer v Pessimist

Physical Condition – Distance Traveled, Ability to Act, Search Time Criticalness

Medical Problems – Distance Traveled, Abnormal Behavior

Category	Hill or Mountainous Terrain					Flat Terrain				
	Median	25%	50%	75%	Max. Zone	Median	25%	50%	75%	Max. Zone
Children 1-6 yrs.	.3 Dn	0.1 Up 0.4 Dn	0.5 Up 0.5 Dn	1.5 Up 1.4 Dn	89% 1.6 Up 2.6 Dn	1.2	1.0 - 1.6	0.6 - 1.7	0.5 - 2.1	92% 0 - 2.2
Children	1.6 Dn	1.0 Dn 2.0 Dn	0.5 Up 2.1 Dn	2.0 Up 4.0 Dn	92% 2.6 Up 4.1 Dn	1.2	0.8 - 1.2	0.7 - 2.0	0.2 - 2.2	92% 0 - 3.0
Elderly	1.2 Dn	0.5 Dn 1.8 Dn	0.0 2.4 Dn	0.4 Up 2.6 Dn	90% 1.0 Up 3.0 Dn	1.0	0.8 - 1.0	0.7 - 1.2	0.1 - 1.3	93% 0 - 3.0
Hikers	2.5 Dn	2.0 Dn 3.0 Dn	0.6 Dn 3.6 Dn	0.4 Up 6.1 Dn	83% 4.0 Up 6.0 Dn	2.0	1.4 - 2.4	1.0 - 3.2	0.2 - 3.3	94% 0 - 4.0
Hunters	2.0 Dn	1.8 Dn 2.8 Dn	0.7 Dn 3.1 Dn	0.8 Dn 4.0 Dn	93% 3.0 Up 6.0 Dn	1.6	1.0 - 1.6	0.9 - 2.2	0.1 - 2.3	89% 0 - 3.0
Misc	1.6 Dn	0.6 Dn 1.6 Dn	0.0 3.0 Dn	1.4 Up 3.1 Dn	84% 2.5 Up 3.2 Dn	1.6	1.1 - 1.6	0.5 - 1.8	0.1 - 2.8	89% 0 - 4.0

Children 1-3 Years

- Unaware of Concept of Being Lost
- Navigation Skills and Sense of Direction Practically Nonexistent
- Tend to Wander Aimlessly With No Specific Objective
- Might Seek Out Most Convenient Location to Lay Down and Go to Sleep
 - Inside a Log
 - Under an Overhanging Rock
 - Inside a Thick Bush
 - Under a Picnic Table

Children 3-6 Years

- More Mobile and Capable of Going Further than 1-3 Category
- Concept of Being Lost and Will Generally Try to Return Home or to Familiar Area
- May Be Drawn Away by Animals, Following Older Children, or Exploring
- When Tired Will Generally Try to Find a Sleeping Spot
- Many Have Been Instructed to Stay Away From Strangers
 - May Not Respond to Name
 - May Hide From Searchers

Children 6-12 Years

- More Developed Navigational and Directional Skills
- More Oriented in Normal Surroundings and Become Confused in Strange Ones
- May Intentionally Run Away to Avoid Punishment, Gain Attention or Sulk
- Often Will Not Answer When Called

Elderly (Above 65 Years)

- Will Often Be Suffering From Alzheimer's Disease
- Easily Attracted to Something that Strikes Their Fancy
- Orientation to Past Environments than the Present
- Many Pose Same Supervision Problems that Children Do
- Active and Lucid Ones Are Likely to Overextend and Exhaust Themselves
- Often Hard of Hearing or Deaf
- Usually go Further than Expected

Mentally Retarded (All Ages)

- Act and React Much Like Children in 6-12 Category
- Generally Will Not Respond to Their Spoken Name
- Often Hidden From View as Result of Fright or Seeking Shelter from Elements
- Many Times Will Hold Up for Days in Same Location
- No Physical Impairments Except They Will Do Nothing to Help Themselves

Despondent

- Often Seeking solitude
- Generally Will Not Respond to Searchers
- Will Generally Be Within Sight and Sound of Civilization
- Tend to Be Found Near Prominent Locations (Lake, Scenic Hill, Area With View)
- May Have Means to Do Themselves or Others Harm

Information Sheet #6

TOPIC: LOST PERSON INTERVIEW STRATEGY

INTRODUCTION: Interview strategy and question list.

Interview Environment– Put Person at Ease

- Interview of People With Firsthand Knowledge as Quickly as Possible
- Information fresh and Not Collaborated with Other
- Interview Witnesses Separately
- Assume Everyone Will Have Something to Contribute if Asked Correctly
- Right Questions Asked in the Right Way
- Conduct Interview in Informal, Relaxed, Comfortable Setting – Private Area
- If Possible Interviewers Should Work In Pairs – Record Responses

Before Gathering Info – Don't Lead Witness or Allow Biases to Distort Interview

- Interviewer Introduce Self and Explain Purpose of Interview
- Convey Sense on Controlled Urgency and Concern – Not Excitement
- Confirm Identifying Information About Witness (Name, Address, Phone, ...)
- Try to Understand the Person and Mentality of Person (Appropriate Questions)
- With Children – Get Down on Their Eye Level
- Female Interviewing Male or Vice Versa May Get More Information

Asking Questions – Gather Information, Don't Put Person on Defensive

- Let Information Lead to Conclusions – Each Witness Has Different Background
- Ask Open Ended Questions (Rather Than “Yes” / “No”)
- Be Good Listener (Let Person Finish Answer Before Move On)
- Don't Be Afraid to Pause After an Answer
- If Needed – Check Validity by Asking a Question Differently Later
- Paraphrase, Summarize, or Read Back the Answer as Needed for Clarity
- Be Alert to Key Words or Phrases, Particularly When Repeated
- Explore Each Point Fully Before Going On To Next Point

Concluding an Interview

- Ask “Is There Anything Else That You Think Might Help”
- Ask the Witness What They Think Happened or What Subject Will Do
- Inform Witness Information Divulged or Withheld Could Have Direct Influence
- Thank the Witness
- Maintain Ability to Contact Witness

Documenting

- If More than One Interviewer Used, Get Together and Compare Information
- “Gut Feelings”, Discrepancies and Missing Information
- Record Information and Pass on to Command / Planning

Information Sheet #7

TOPIC: LOST PERSON DATA

INTRODUCTION: Data to gather by interviewing.

Recorded Information on Questionnaire

Incident Title:	Incident Date:	Incident #:	SAR #:
Person Taking Info:	Time:	File #:	

Source of Information

Name (of Reporting Party):	How Taken (Phone, ...):
Home Address:	
Phone #:	Work Phone #:
Cell #:	Pager #:
Relationship (to Missing Person):	
Where / How to Contact Now:	
Where / How to Contact Later:	
What Does Informant Believe Happened?	

Lost Person

Name:	Gender:
Nicknames:	Date of Birth:
Home Address:	Birthplace:
Local Address:	
Phone #:	Work Phone #:
Cell #:	Pager #:
Passwords for Children:	

Physical Description

Height:	Weight:	Age:	Build:
Hair Color:	Length:	Style:	
Beard:	Mustache:	Sideburns:	
Facial Features / Shape:	Complexion:		
Distinguishing Marks:	Overall Appearance:		
Photo Available (where)?:	How Old Is Photo?		
Comments:			

Last Seen

Last Seen: Time:
 By Whom
 Witness Current Location:
 Location of Sighting:
 Why/How:

Last Talked to at Length Time:
 By Whom:
 Witness Current Location:
 Location of Conversation:
 Subject Matter of Conversation:
 Weather at Time Seen:
 Weather Since Conversation:

Last Known Direction of Travel: Time:
 Reason for Leaving: Time:
 Attitude (Confident, Confused, ...) Time:
 Subject Complaining of Anything: Time:
 Subject Seem Tired: Time:
 Subject Seem Cold / Hot: Time:
 Other Sign / Symptom: Time:

Comments:

Outdoor Experience

Familiar With Area:	How Recent:	Other:
Other Areas of Travel:		
Formal Outdoor Training:		
Degree:	When:	Where:
Medical Training:	When:	
Scouting Experience:	When:	Where:
Scout Leader:		
Military Experience:	When:	Where:
What:	Rank:	Other:
Generalized Previous Experience:		
How Much Overnight Experience:		
Ever Been Lost Before?	When:	Where:
Ever Go Out Alone:		Where:
Stay On Trails or Cross-Country:		
How Fast Does Subject Hike:		
Athletic / Other Interests:		
Climbing Experience:		
Comments:		

Habits / Personality

Smoke:	How Often:	What:	Brand:
Alcohol:	How Often:	What:	Brand:
Recreational Drugs:	How Often:		
Gum:	Candy:	Other:	
Hobbies / Interests:			
Outgoing / Quiet:		Gregarious / Loner:	
Evidence of Leadership:			
Legal Trouble (Past / Present):			
Give Up Easily / Keep Going:			
Hitchhike (Yes / No):		Accepts Rides Easily:	
Personal Problems:			
Religious (Yes / No):	Faith:	Degree:	
Personal Values:			
Philosophy:			
Person Closest To:	In Family:		
Emotional History:			
Education - Grade:		Current Status:	Teacher(s):
	School Name:	College Education:	
	Subject / Degree:	Year:	
Local / Fictional Hero:			
Comments:			
Clean / Well Groomed / Dirty / Unkempt?			

Health / General Condition

Overall Health:	Overall Physical Condition:
Handicaps:	Known Psychological Problems:
Known Medical Problems:	
Eyesight Without Glasses / Contacts:	Spares (Yes / No):
Knowledgeable Doctor:	Phone #:
Knowledgeable Person:	Phone #:
Medications:	Amounts:
Consequences of Loss:	
Knowledgeable Person:	Phone #:

Equipment	Style	Color	Brand	Size
Pack:				
Tent:				
Sleeping Bag:				
Ground Cloth:				
Fishing Equipment:				
Climbing Equipment:				
Liquid Container:				
Fire Starter:				
Light:				
Stove:				
Stove Fuel:				
Compass:				
Map or Guidebook:				
Whistle:				
Flares, Strobe, Beacon, ..				
Knife:				
Camera:				
Food:				
Skis:				
Ski Bindings:				
Ski Poles:				
Snowshoes:				
Snowshoe Bindings:				
Firearms:				
Firearm Holster:				
Money:	Amount:		Credit Cards:	
Other Documents:				
Navigation Competency:				
Skiing Competency:				
Snowshoe Competency				
Cellular Phone and #:				
Comments:				

Contacts Person Would Make Upon Reaching Civilization

Name:	Relation:	Phone Number:
Address:		Anyone Home Now?:

Children

Afraid of Dark:	Animals:	Other:
Feeling Toward Adults:	Strangers:	
Reaction When Hurt:	Type of Cry:	
Training When Lost:	Active / Lethargic / Antisocial:	
Would Respond to Searcher's Calls:		
Would Respond to What Name or Nickname:		
Comments:		

Groups Overdue

Name / Kind of Group:	Leader:
Experience of Group / Leader:	
Address / Phone of Knowledgeable Person:	
Personality Clashes Within Group:	
Leader Types Other Than Leader:	
Actions If Separated:	
Competitive Spirit of Group:	
Intragroup Dynamics:	
Comments:	

Actions Taken So Far

By Family / Friends:	Results:
Other:	Results:
Comments:	

Media / Family Relations

Next of Kin:	Relationship:	
Address:	Phone #:	Occupation:
Person to Notify When Subject Found:	Relationship:	
Address:	Phone #:	Occupation:
Significant Family Problems:		
Family's Desire to Employ Special Assistance:		
Comments:		

Other Information

Information Sheet #8

TOPIC: DETECTION PROBABILITY FOR SWEEP SEARCH CONDITIONS

INTRODUCTION: Planning data for evaluating quality of search.

Sound Sweep – Persons Presumed Alive and Responsive

Standard Sweep – Persons Where No Particular Information Is Available

High Visibility Sweeps – Persons Known to Be Wearing High Visibility Clothing

Low Visibility Sweeps – Unconscious or Known to Be Wearing Low Visibility Clothing

Body Sweeps – Persons Presumed Dead

Critical Separation – Object is Halfway Between Two Searchers at Limit of Visibility
 Theoretical POD of 50% Actual POD Closer to 80%

Recommended Sweep Search Conditions

Search Type	High Probability			Low Probability			Large Search Area		
	% POD	# of Sweeps	Searcher Spacing	% POD	# of Sweeps	Searcher Spacing	% POD	# of Sweeps	Searcher Spacing
Sound Sweep	80	3	689 ft 286 paces	40	1	689 ft 286 paces	40	1	689 ft 286 paces
Standard Sweep	80	2	135 ft 56 paces	40	1	207 ft 86 paces	19	1	656 ft 272 paces
High Visibility	80	1	89 ft 37 paces	40	1	249 ft 103 paces	22	1	738 ft 306 paces
Low Visibility	80	2	102 ft 42 paces	40	1	171 ft 71 paces	19	1	755 ft 313 paces
Body Sweep	70	1	62 ft 26 paces	40	1	184 ft 76 paces	15	1	679 ft 282 paces

Probability of Detection (POD) Best Way Is by Field Tests of Search Area

Predictive – Planning Tool Used With Theoretical Predictions

Retrospective – Estimate Given By Field Teams For Finding Something

Thoroughness of Search – # Items Found / # Item in Area

Efficiency of Search – Proportion of Item Found in Unit of Area per Searcher Time

POD Efficiency = # Items Found x Search Area / (# Items x Number Hrs)

$$POD_{cum} = 1 - [(1-POD_1)(1-POD_2)(1-POD_3)...(1-POD_N)]$$

Search Area POD Dependent on

Terrain – Flatness of Ground

Training – Ability of Searchers

Size – Size of Clue / Person

Vegetation – How Well Can See to Ground

Visibility - Clue / Person

Speed – How Fast Search Conducted

$$Area (sq miles) = \frac{\# Searchers \times \# Hrs \times Speed (mph) \times Searcher Spacing (ft)}{\# of Sweeps \times 5280}$$

Information Sheet #9

TOPIC: THEORY OF SEARCH PROBABILITIES

INTRODUCTION: Planning data for predicting priorities of search.

General Way of Calculating Probabilities

100%	Bet My Life	
90%	I'm Positive	→ Very Likely
80%	I'm Sure	
70%	I'm Convinced	→ Likely
60%	A Good Chance	
50%	It's 50-50	→ Even Chance
40%	I Think So	
30%	Could Be	→ Unlikely
20%	Maybe	
10%	Perhaps	→ Very Unlikely
0%	I Don't Know	

Probability of Success (POS) – Estimate of Finding Subject or Clues in Area

Probability of Area (POA) – Chance Subject or Clues Are in Area

Probability of Detection (POD) – Chance Subject or Clues Will Be Detected

$$POS = POA \times POD$$

Search Priority Given to Area With Appropriate Search Technique Giving Best Chance of Finding Missing Person or Clues

Information Sheet #10

TOPIC: PROBABITLIY OF AREA - POA

INTRODUCTION: Planning technique for estimating location of subject or clues.

Search Area Established Based on Passive Search Techniques

Initial Planning Point (IPP) – Start Point of Planning the Search

Point Last Seen (PLS) – Last Point Where Subject Was Seen by Witness

Last Known Position (LKP) – Last Substantiated Position of Missing Person

Theoretical – Distance Subject Capable of Moving

Statistical – Distance Traveled by Other Subjects Under Similar Circumstances

Subjective – Evaluated for Limiting Factors for Incident and Geographic Location

Likely Spots – High Probability Areas to Check

Ease of Movement, Shelter, Food or Water, Curiosity

Natural Barriers and Terrain Features – River, Caves, Drainage Ditch

Physical Clues Left by Subject – Footprints, Clothing, Equipment, ...

Historical Data of Area From Case Histories – Previous Lost Persons in Area

Gut Feeling or Intuition Base on Experience – Personal Feeling

Physical / Mental Limitation of Subject – Usually Over or Under Estimated

Deductive Reasoning – Methodical Step by Step Analysis

Assigning Probabilities to Search Areas

Based on Theoretical, Statistical, Subjective and Deductive Reasoning Data

Use Small Group of People to Assign Probabilities to Areas – Totals to 100%

Average Results for Assigning a POA to Search Areas

Each Search Area Gets Probability

Rest of World (ROW) Get Remainder of Probability

Reassign Probabilities for Search After Each Significant Event or Clue

Helps Focus Search on Most Likely Area

Causes Reevaluation of Search After Successive Event

Information Sheet #11

TOPIC: GUIDELINES FOR SURFACE WATER-BASED SEARCH OPERATIONS

INTRODUCTION: Search method for water centric search.

Response as per Info Sheet 1 "Initial Search Considerations"

Additional Considerations for Water Centric Search Operations

Conduct Reconnaissance of Area – Check for Hazards and Likely Locations

- Limit Access To Search Area to Trained Water Rescue Personnel
- All Personnel Within 5 feet of Water's Edge Wearing Appropriate PPE
- Drive Roads or Hike Perimeter of Area as Able
- Determine Risk of Area(s) for Water Search
- Determine High Probability Areas in Water for Search

Use Lowest Risk / Highest Effectiveness Method of Search

- Alter Environment (Example – Able to Shut Off Water From Dam)
- Inspect Water and Shoreline from Shoreline (Walking or Wading)
 - Look or Probe Water for Victim (and Clues)
- Inspect Water and Shoreline from Water Surface (In Boat, Rescue Board)
 - Look or Probe Water for Victim (and Clues)
- Use Rope System to Suspend Rescue Over High Risk Area
 - Look or Probe Water for Victim (and Clues)

Grid or Sweep Searching On Water Search

- Use Similar Method to Ground Grid Search