

**SOUTH SHORE ESTUARY RESERVE:
STREAM BARRIER INVENTORY AND CHARACTERIZATION WORKSHEETS**

Stream/River:		SSER Barrier ID: Dam # _____ or Crossing # _____	
Crossing Location:		GPS Lat: _____ Long: _____	
Town:		Date:	Time:
Investigators:		Agency:	
Weather Conditions	Now		Past 24 hrs
	<input type="checkbox"/> storm (heavy rain) <input type="checkbox"/> rain (steady rain) <input type="checkbox"/> showers (intermittent) ___% <input type="checkbox"/> %cloud cover <input type="checkbox"/> clear/sunny		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ___% <input type="checkbox"/>
Has there been a heavy rain in the last 7 days? <input type="checkbox"/> Yes <input type="checkbox"/> No Air Temperature: _____ °F Other: _____			
Road/Railway Characteristics	# of Travel Lanes: Road Surface: <input type="checkbox"/> Paved <input type="checkbox"/> Unpaved <input type="checkbox"/> RR		Shoulder/Breakdown Lanes: <input type="checkbox"/> Yes <input type="checkbox"/> No Road-side ditches: <input type="checkbox"/> Yes <input type="checkbox"/> No
Barrier/Crossing Characteristics	Crossing Type: <input type="checkbox"/> Culvert <input type="checkbox"/> Bridge <input type="checkbox"/> Buried Segment <input type="checkbox"/> Open Bottom Arch <input type="checkbox"/> Dam <input type="checkbox"/> Other _____		Is the stream flowing (in the natural channel) during generally low-flow conditions? <input type="checkbox"/> Yes <input type="checkbox"/> No
Barrier Background	Barrier Owner Type <input type="checkbox"/> Local government <input type="checkbox"/> State <input type="checkbox"/> Private <input type="checkbox"/> Unknown Are there issues with site access: <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, explain:		Barrier Owner Name: Barrier Owner Address:
Watershed Features	Predominant Watershed Land Use: <input type="checkbox"/> Forest <input type="checkbox"/> Commercial <input type="checkbox"/> Field/Pasture <input type="checkbox"/> Industrial <input type="checkbox"/> Agricultural <input type="checkbox"/> Other _____ <input type="checkbox"/> Residential		River Designation: <input type="checkbox"/> NYSDOS Significant Fish & Wildlife Habitat <input type="checkbox"/> State Wild & Scenic River <input type="checkbox"/> None Drainage Area (acres): _____
Instream Features (within 300 ft of crossing)	Estimated Stream Width (ft): _____ Estimated Stream Depth (ft): _____ Surface Velocity (ft/sec): _____ State Water Quality Classification for Stream/River Segment: _____ Canopy Cover <input type="checkbox"/> Partly open <input type="checkbox"/> Partly shaded <input type="checkbox"/> Shaded		Dominant Substrate(s) <input type="checkbox"/> Boulder/Cobble <input type="checkbox"/> Gravel <input type="checkbox"/> Sand <input type="checkbox"/> Silt <input type="checkbox"/> Mud <input type="checkbox"/> Concrete <input type="checkbox"/> Rip-rap Water Odors <input type="checkbox"/> Normal/None <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Fishy <input type="checkbox"/> Other _____ Turbidity <input type="checkbox"/> Clear <input type="checkbox"/> Slightly turbid <input type="checkbox"/> Turbid <input type="checkbox"/> Opaque <input type="checkbox"/> Stained <input type="checkbox"/> Other
Macro-invertebrates Observed *	Macroinvertebrate community dominated by: <input type="checkbox"/> Group I or intolerant species with good diversity (e.g., caddisflies, mayflies, stoneflies, hellgrammites). <input type="checkbox"/> Group II or facultative species (e.g., damselflies, dragonflies, aquatic sowbugs, blackflies, crayfish). <input type="checkbox"/> Group III or tolerant species (e.g., midges, craneflies, horseflies, leeches, worms). <input type="checkbox"/> Very reduced number of species or near absence of all macroinvertebrates.		
Problematic Vegetation	The following species are present: <input type="checkbox"/> Watermilfoil (<i>Myriophyllum spp.</i>) <input type="checkbox"/> Purple loosestrife <input type="checkbox"/> Japanese knotweed <input type="checkbox"/> Common reed (<i>Phragmites</i>) <input type="checkbox"/> Fanwort (<i>Cabomba</i>) <input type="checkbox"/> Other: _____ Are any of the above species a potential barrier to fish passage? <input type="checkbox"/> Yes <input type="checkbox"/> No		

BARRIER CHARACTERIZATION: DAMS

SSER Dam #

Dam Features	<p>Dam Name: _____</p> <p>Other Dam Name: _____</p> <p>NPDP ID: _____</p> <p>State ID: _____</p> <p>Year of Completion: _____</p> <p>Type: <input type="checkbox"/> Impounding Dam (controlled release) <input type="checkbox"/> Run-of-river Dam (no controlled release)</p> <p>Dam material: <input type="checkbox"/> Earth <input type="checkbox"/> Concrete <input type="checkbox"/> Stone <input type="checkbox"/> Other _____</p> <p>NYSDEC Permit required for modification and/or fish passage work: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Hazard Classification Code: Class A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/></p> <p>Dam Height (ft): _____ (as measured at downstream side - stream bed to top of crest)</p> <p>Crest Length (ft): _____</p> <p>Normal Storage Capacity (ac-ft): _____</p> <p>Max. Storage Capacity (ac-ft): _____</p> <p>Impoundment Area (ac): _____</p> <p>Drainage Area (sq. mi.): _____</p>	<p>Original Dam Purpose: <input type="checkbox"/> Hydropower <input type="checkbox"/> Irrigation <input type="checkbox"/> Recreation <input type="checkbox"/> Fish & Wildlife Pond <input type="checkbox"/> Debris Control <input type="checkbox"/> Fire Protection/Stock/Farm Pond <input type="checkbox"/> Flood Control/Stormwater Management <input type="checkbox"/> None <input type="checkbox"/> Unknown <input type="checkbox"/> Other _____</p> <p>Present Dam Use: <input type="checkbox"/> Hydropower <input type="checkbox"/> Irrigation <input type="checkbox"/> Recreation <input type="checkbox"/> Fish & Wildlife Pond <input type="checkbox"/> Debris Control <input type="checkbox"/> Fire Protection/Stock/Farm Pond <input type="checkbox"/> Flood Control/Stormwater Management <input type="checkbox"/> None <input type="checkbox"/> Unknown <input type="checkbox"/> Other _____</p> <p>Functioning Fish Passage Device: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Listed on National or State Register of Historic Places: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Equipment can access the dam without performing extensive clearing of vegetation, road building, etc. <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Dam Condition: <input type="checkbox"/> Good <input type="checkbox"/> Slight Erosion/Rust <input type="checkbox"/> About 50% Erosion/Rust <input type="checkbox"/> Almost Entirely Eroded/Rusted <input type="checkbox"/> Collapsed</p> <p>Visible infrastructure issues: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If yes, explain: _____</p>
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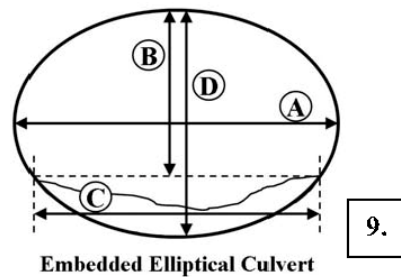
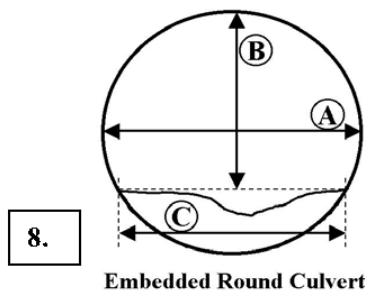
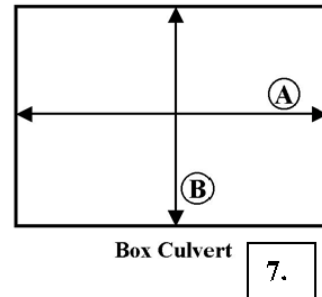
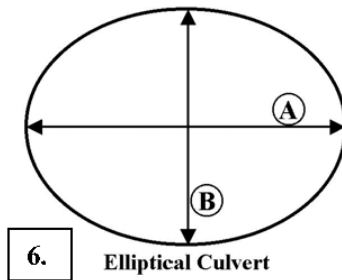
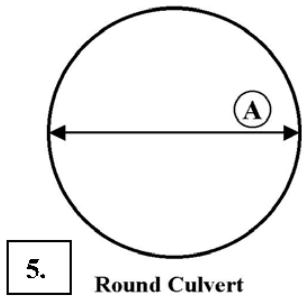
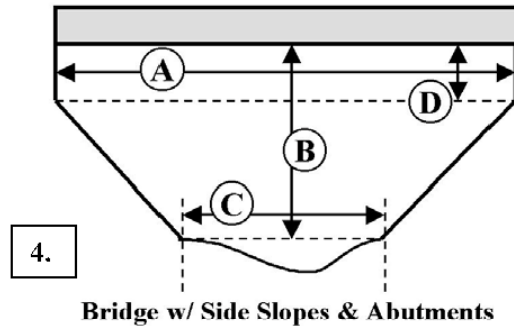
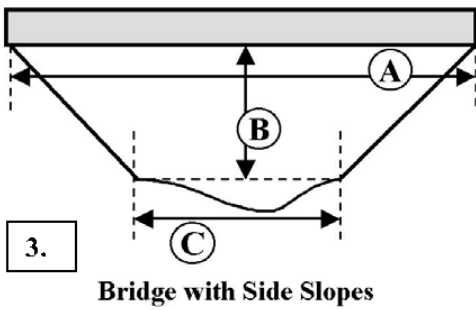
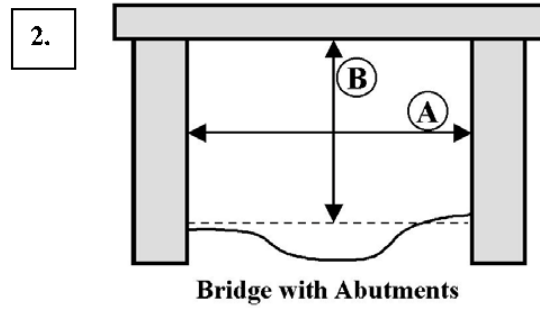
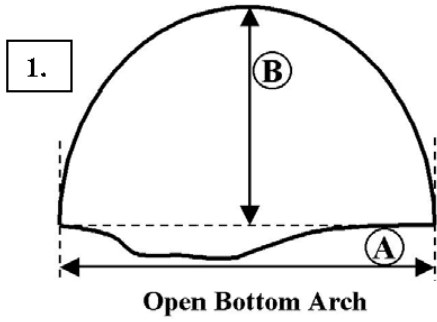
BARRIER CHARACTERIZATION: CULVERTS, BRIDGES & BURIED SEGMENTS

SSER Crossing #

Crossing Features	<p>Crossing Type: <input type="checkbox"/> Single Culvert <input type="checkbox"/> Multiple Culverts (#): _____ <input type="checkbox"/> Bridge <input type="checkbox"/> Other _____</p> <p>If applicable, County Culvert #: _____</p> <p>Crossing material: <input type="checkbox"/> Metal <input type="checkbox"/> Concrete <input type="checkbox"/> Plastic <input type="checkbox"/> Other _____</p> <p>Associated with roadway: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Stream flow is constricted: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Tailwater armoring: <input type="checkbox"/> Extensive <input type="checkbox"/> Not Extensive <input type="checkbox"/> None</p> <p>Tailwater scour pool: <input type="checkbox"/> Large <input type="checkbox"/> Small <input type="checkbox"/> None</p> <p>Crossing Embeddedness: <input type="checkbox"/> Not embedded <input type="checkbox"/> Partially embedded <input type="checkbox"/> Fully embedded < 1' <input type="checkbox"/> Fully embedded > 1'</p> <p>Is crossing substrate comparable to natural channel? <input type="checkbox"/> Yes (comparable) <input type="checkbox"/> No (significantly different) If no, substrate is: <input type="checkbox"/> Boulder/Cobble <input type="checkbox"/> Gravel <input type="checkbox"/> Sand <input type="checkbox"/> Silt <input type="checkbox"/> Mud <input type="checkbox"/> Concrete <input type="checkbox"/> Rip-rap</p>	<p>Water depth in crossing matches that of the stream? <input type="checkbox"/> Yes (comparable) <input type="checkbox"/> No (significantly different)</p> <p>Inlet drop <input type="checkbox"/> No <input type="checkbox"/> <6" <input type="checkbox"/> ≥ 6" Outlet drop <input type="checkbox"/> No <input type="checkbox"/> <6" <input type="checkbox"/> ≥ 6"</p> <p>Normal high water mark from stream bottom (ft): _____</p> <p>Water velocity in crossing matches that of the stream? <input type="checkbox"/> Yes (comparable) <input type="checkbox"/> No (significantly different)</p> <p>Crossing span: <input type="checkbox"/> Constricts channel <input type="checkbox"/> Spans active channel <input type="checkbox"/> Spans bankfull width <input type="checkbox"/> Spans channel & banks</p> <p>Crossing Feature Condition: <input type="checkbox"/> Good <input type="checkbox"/> Slight Erosion/Rust/Disrepair <input type="checkbox"/> About 50% Erosion/Rust/Disrepair <input type="checkbox"/> Almost Entirely Eroded/Rusted/Disrepair <input type="checkbox"/> Collapsed <input type="checkbox"/> Blocked (% _____)</p> <p>Physical barriers to fish and wildlife passage: <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary <input type="checkbox"/> None</p>
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DIMENSIONS WORKSHEET FOR CROSSINGS

SSER Crossing # _____



Crossing Type (from above): 1. 2. 3. 4. 5. 6. 7. 8. 9.

Upstream Dimensions (ft): A) _____ B) _____ C) _____ D) _____

Downstream Dimensions (ft): A) _____ B) _____ C) _____ D) _____

Length of stream through Crossing (ft): _____

DIMENSIONS WORKSHEET FOR MULTIPLE CULVERT CROSSINGS

SSER Crossing # _____

Note: *When inventorying multiple culverts, label left culvert 1 and go in increasing order from left to right from downstream end (outlet) looking upstream.*

Number of Culverts or Bridge Cells _____

Culvert or Bridge Cell 2 of _____

Crossing Type (from above): 1. 2. 3. 4. 5. 6. 7. 8. 9.

Upstream Dimensions (ft): A) _____ B) _____ C) _____ D) _____

Downstream Dimensions (ft): A) _____ B) _____ C) _____ D) _____

Length of stream through crossing (ft): _____

Culvert or Bridge Cell 3 of _____

Crossing Type (from above): 1. 2. 3. 4. 5. 6. 7. 8. 9.

Upstream Dimensions (ft): A) _____ B) _____ C) _____ D) _____

Downstream Dimensions (ft): A) _____ B) _____ C) _____ D) _____

Length of stream through crossing (ft): _____

Adapted from the Massachusetts Road – Stream Crossing Inventory

HABITAT ASSESSMENT — LOW GRADIENT STREAMS

SSER Barrier ID: Dam # _____ or Crossing # _____

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large- shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small- shallow or pools absent
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note: channel braiding is normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length into 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods,	Unstable; many eroded areas; “raw” areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the stream bank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 cm or less in average stubble height.
SCORE__ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE__ (RB)	RightBank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 m; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 m; human activities have impacted zone only minimally.	Width of riparian zone 6-12 m; human activities have impacted zone a great deal.	Width of riparian zone <6 m: little or no riparian vegetation due to human activities.
SCORE__ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE__ (RB)	RightBank 10 9	8 7 6	5 4 3	2 1 0
Total Score: _____				

As included in the USEPA Rapid Bioassessment Protocol for Wadeable Streams (Barbour et al., 1999)

BARRIER PHOTOS

Photos (approx. 6: 1 upstream, 1 downstream, 2 upstream riparian, 2 downstream riparian.)	Photo ID	Brief photo description (i.e. “From down stream looking northeast, towards gauging station.”)

Additional Notes/Observations:

DAMS DATABASE KEY

ID – Dam ID number

RIVER – River the Dam is located on

LOCATION – Location of dam

TOWN – Town dam is located in

INVESTIGATORS – Initials of personnel performing field work as categorized below:

SD – Sara da Silva

CO – Carrie O’Farrell

EA – Ellen Axelsen

LP – Lara Pomi

CV – Chic Voorhis

LAT – Latitude of dam

LONG – Longitude of dam

DATE – Date field work conducted

TIME – Time data recorded

RAIN – Yes (Y) or No (N) designating whether or not heavy rain occurred in past 7 days.

AIR_TEMP – Temperature at the time of data collection

LANES – Number of travel lanes that span the dam, if applicable.

ROADSURF – Characteristics of the road surface, defined as follows:

Paved

Unpaved

Railroad

SHOULDER – Yes (Y) or No (N) designating whether or not there are shoulder lanes at the dam.

DITCH – Yes (Y) or No (N) designating whether or not there are roadside ditches at the dam.

TYPE – Type of dam.

FLOWING – Yes (Y) or No (N) designating whether the stream is flowing during low-flow conditions.

OWNER – Name of Barrier owner.

ADDRESS – Address of barrier owner.

OWNER_TYPE – Barrier owner type, categorized as follows:

Local government

State

Private

Unknown

ACCESS_ISSUE – Yes (Y) or No (N) designating whether or not there are issues with site access.

RIVER_DES – River Designation, coded as follows:

SFWH – NYSDOS Significant Fish and Wildlife Habitat

WSRR – State Wild and Scenic Recreational River

None

WIDTH – Estimated stream width, in feet.

DEPTH – Estimated stream depth, in feet.

VELOCITY – Surface velocity, in feet/second.

NY_WQ – State (NYSDEC) water quality classification

B = Fresh - 1^o & 2^o contact recreation; fishing; fish propagation & survival

C = Fresh - fishing; fish propagation & survival; water quality suitable for 1^o & 2^o contact recreation, but

other factors may limit the use for these purposes.

SC = Saline - fishing; fish propagation & survival; water quality suitable for 1° & 2° contact recreation, but other factors may limit the use for these purposes.

C(T) = Fresh trout waters - fishing; fish propagation & survival; water quality suitable for 1° & 2° contact recreation, but other factors may limit the use for these purposes.

C(TS) = Fresh trout spawning waters - fishing; fish propagation & survival; water quality suitable for 1° & 2° contact recreation, but other factors may limit the use for these purposes.

CANOPY – Canopy cover, classified as follows:

Partly open	Partly shaded	Shaded
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SUBSTRATE – Dominant Substrate found in crossing, coded as follows:

Boulder/Cobble	Silt	Rip-rap
Gravel	Mud	
Sand	Concrete	

ODORS – Water odors, coded as follows

Normal/None	Petroleum	Fishy
Sewage	Chemical	Other

TURBID – Turbidity of the water, classified as follows:

Clear	Turbid	Stained
Slightly Turbid	Opaque	Other

MACRO – Macroinvertebrate Groups, classified as follows:

Group 1 – Pollution-intolerant species with good diversity

Group 2 – facultative species

Group 3 – Pollution-tolerant species

V. Reduced – very reduced number of species or near absence of all macroinvertebrates

PROBLEM_VEG – Problematic vegetative species present threatening to clog the waterway.

NAME – Name of dam

ALTERNATE – Alternate name of dam, if any.

NPDP_ID - National Performance of Dams Program (NPDP) ID number

NY_ID – New York State ID number

YEAR_COMPL – Year of completion of the dam.

TYPE – Type of dam, coded as follows:

Impounding Dam

Run-of-river Dam

MATERIAL – Material of which dam is constructed.

PERMIT_REQD – Yes (Y) or No (N) for if a NYSDEC Dam Safety Permit is required for work on the dam.

HAZARD_COD –Hazard classification code for potential hazard to downstream area resulting from failure or mis-operation of dam or facility, (as per NYSDEC Dam Database, or determined by NP&V based on DEC methodology)

A = **Low Hazard** – Dam failure can damage only isolated farm buildings, vacant land or rural roads.

B = **Moderate Hazard** – Dam failure can damage homes, major roads, minor railroads or interrupt use or service of relatively important public utilities.

C = **High Hazard** – Dam failure can cause loss of life, serious damage to homes, industrial or commercial highways and railroads.

D = **No Hazard** – Dam not built, or is breached, or failed to the extent that it no longer functions as a dam.

Structure impounds no normal pool, and does not unduly impede the flow of water.

HEIGHT – Height of dam, as measured on downstream side, in feet.

CREST_LENGTH – Crest length of dam, as measured in feet.

NORMAL_STO – Normal storage capacity of dam, as measured in acre-feet.

MAXIMUM_ST – Maximum storage capacity of the dam, as measured in acre-feet.

IMPOUND_AR – Impoundment area, as measured in acres.

DRAINAGE_A – Drainage area, as measure in square miles.

PAST_USE – Original purpose of the dam, coded as follows:

H - Hydropower

I – Irrigation

R – Recreation

FW – Fish and Wildlife

DC – Debris control

FP – Fire protection/Stock/Farm Pond

FC – Flood Control/Stormwater management

N – None

U – Unknown

O – Other

CURRENT_USE – Present purpose of the dam, coded as follows:

H - Hydropower

I – Irrigation

R – Recreation

FW – Fish and Wildlife

DC – Debris control

FP – Fire protection/Stock/Farm Pond

FC – Flood Control/Stormwater management

N – None

U – Unknown

O – Other

FISH_DEVICE – Yes (Y) or No (N) designating whether a functioning fish passage device is installed.

NRHP_ID – Yes (Y) or No (N) designating whether or not the dam is listed on the National or State register of Historic Places.

MACHINE_ACCESS – Yes (Y) or No (N) designating whether or not equipment can access the dam without performing extensive clearing of vegetation, road building, etc.

CONDITION – Dam condition, coded as follows:

Good

Slight Erosion/Rust/Disrepair

About 50% Erosion/Rust

Almost Entirely Eroded/Rusted

Collapsed

ISSUES – Yes (Y) or No (N) designating whether or not visible infrastructure issues are present

HAB_SCORE – Total habitat assessment score, out of maximum possible 200.

CROSSINGS DATABASE KEY

ID – Crossing ID number

RIVER – River the crossing is located on

LOCATION – Location of crossing

TOWN – Town crossing is located in

INVESTIGATORS – Initials of personnel performing field work as categorized below:

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CO – Carrie O'Farrell

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CANOPY – Canopy cover, classified as follows:

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SUBSTRATE – Dominant Substrate found in crossing, coded as follows:

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Slightly Turbid	Opaque	Other

MACRO – Macroinvertebrate Groups, classified as follows:

- Group 1 – Pollution-intolerant species with good diversity
- Group 2 – facultative species
- Group 3 – Pollution-tolerant species
- V. Reduced – very reduced number of species or near absence of all macroinvertebrates

PROBLEM_VEG – Problematic invasive vegetative species present threatening to clog the waterway.

COUNTY_ID – County culvert number, if applicable.

MATERIAL – Material crossing is made of.

ROAD – Yes (Y) or No (N) designating whether or not the crossing is associated with a roadway.

CONSTRICTED – Yes (Y) or No (N) designating whether or not the stream flow is constricted by the crossing.

ARMORING – Tailwater armoring, coded as follows:

E – Extensive	NE – Not Extensive	N – None
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SCOUR – Tailwater scour pools, coded as follows:

L – Large	S – Small	N – None
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EMBED – Crossing Embeddedness, coded as follows:

No – Not embedded	Fully<1 – Fully embedded, less than 1 foot
Partially – Partially embedded	Fully>1 – Fully embedded, greater than 1 foot

SUB_COMP – Yes (Y) if crossing substrate is comparable to natural channel, and a listing of substrate type if not.

DEPTH_COMP – Yes (Y) or No (N) for whether or not the water depth in crossing matches that of the stream.

INLET_DROP – Whether or not there is an inlet drop, coded as follows:

No	Less than 6”	Greater than 6”
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OUTLET_DROP – Whether or not there is an outlet drop, coded as follows:

No	Less than 6”	Greater than 6”
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HIGH_WTR – Normal high water mark from the stream bottom, measured in feet

VEL_COMP – Yes (Y) or No (N) for whether or not the water velocity in the crossing matches that of the stream.

SPAN – The crossing span, coded as follows:

constricts channel	spans bankfull width
spans active channel	spans channel and banks

DISREPAIR – Crossing Feature Condition, coded as follows:

Good	Almost Entirely Eroded/Rusted
Slight Erosion/Rust/Disrepair	Collapsed
About 50% Erosion/Rust	Blocked

BARRIER – Physical barriers to fish and wildlife passage, coded as follows:

Permanent	None
Temporary	

TYPE_NUM - The type of crossing encountered, designated as follows:

1 – Open Bottom Arch	6 – Elliptical culvert
2 – Bridge with abutments	7 – box culvert
3 – bridge with side slopes	8 – embedded round culvert
4 – bridge with side slopes and abutments	9 – embedded elliptical culvert
5 – round culvert	

UP_A – Upstream Dimensions “A” (Max. width of structure, in feet, as measured from the inside of structure).

UP_B – Upstream Dimensions “B” (Max. height of structure, in feet, as measured from the water surface to the inside of the top of the structure).

UP_C – Upstream dimensions “C” (Width of structure, in feet, at water level).

UP_D – Upstream dimension “D” (Height, in feet; varies according to type – see illustration in datasheet).

DOWN_A - Downstream Dimensions “A” (Max. width of structure, in feet, as measured from the inside of structure).

DOWN_B - Downstream Dimensions “B” (Maximum height of structure, in feet, as measured from the water surface to the inside of the top of the structure).

DOWN_C - Downstream dimensions “C” (Width of structure, in feet, at water level).

DOWN_D - Downstream dimension “D” (Height, in feet; varies according to type – see illustration in datasheet).

LENGTH – Length of stream through the crossing, as measured in feet

TYPE_NUM2 – The type of crossing encountered, of second crossing, if present, designated as follows:

1 – Open Bottom Arch	6 – Elliptical culvert
2 – Bridge with abutments	7 – box culvert
3 – bridge with side slopes	8 – embedded round culvert
4 – bridge with side slopes and abutments	9 – embedded elliptical culvert
5 – round culvert	

UP_A2 – Upstream Dimensions “A” (Maximum width of structure, in feet, as measured from the inside of structure) for the second crossing, if present.

UP_B2 – Upstream Dimensions “B” (Maximum height of structure, in feet, as measured from the water surface to the inside of the top of the structure) for the second crossing, if present.

UP_C2 – Upstream dimensions “C” (Width of structure, in feet, at water level) for second crossing, if present.

UP_D2 – Upstream dimension “D” (Height, in feet; varies according to type – see illustration in datasheet) for second crossing, if present.

DOWN_A2 - Downstream Dimensions “A” (Maximum width of structure, in feet, as measured from the inside of structure) for second crossing, if present.

DOWN_B2 - Downstream Dimensions “B” (Maximum height or structure, in feet, as measured from the water surface to the inside of the top of the structure) for second crossing, if present.

DOWN_C2 - Downstream dimensions “C” (Width of structure, in feet, at water level) for second crossing, if present.

DOWN_D2 - Downstream dimension “D” (Height, in feet; varies according to type – see illustration in datasheet) for second crossing, if present.

LENGTH_2 – Length of stream through the crossing, as measured in feet, of second crossing, if present.

TYPE_NUM3 – The type of crossing encountered, of third crossing, if present, designated as follows:

- | | |
|---|---------------------------------|
| 1 – Open Bottom Arch | 6 – Elliptical culvert |
| 2 – Bridge with abutments | 7 – box culvert |
| 3 – bridge with side slopes | 8 – embedded round culvert |
| 4 – bridge with side slopes and abutments | 9 – embedded elliptical culvert |
| 5 – round culvert | |

UP_A3 – Upstream Dimensions “A” (Maximum width of structure, in feet, as measured from the inside of structure) for the third crossing, if present.

UP_B3 – Upstream Dimensions “B” (Maximum height of structure, in feet, as measured from the water surface to the inside of the top of the structure) for third crossing, if present.

UP_C3 – Upstream dimensions “C” (Width of structure, in feet, at water level) for third crossing, if present.

UP_D3 – Upstream dimension “D” (Height, in feet; varies according to type – see illustration in datasheet) for third crossing, if present.

DOWN_A3 - Downstream Dimensions “A” (Maximum width of structure, in feet, as measured from the inside of structure) for third crossing, if present.

DOWN_B3 - Downstream Dimensions “B” (Maximum height of structure, in feet, as measured from the water surface to the inside of the top of the structure) for third crossing, if present.

DOWN_C3 - Downstream dimensions “C” (Width of structure, in feet, at water level) for third crossing, if present.

DOWN_D3 - Downstream dimension “D” (Height, in feet; varies according to type – see illustration in datasheet) for third crossing, if present.

LENGTH_3 – Length of stream through the crossing, as measured in feet, for third crossing, if present.

ISSUES – Yes (Y) or No (N) designating whether or not visible infrastructure issues are present.

HAB_SCORE – Total habitat assessment score, out of maximum possible 200.