Summary of documents relevant to Sparkill Creek

**Planning and General Studies**

[Orangetown Comprehensive Plan – Update in Progress 2022](https://www.orangetown.com/orangetown-comprehensive-plan/)

 <https://www.orangetown.com/orangetown-comprehensive-plan/>

[Orangetown Comprehensive Plan - 2003](https://www.orangetown.com/comprehensive-plan/) https://www.orangetown.com/comprehensive-plan/

* Cites Third Regional Plan for NY-NJ-CT Metro Area: call for Greensward initiative dealing with green infrastructure of wetlands etc ((I-2)
* Notes compliance at many governmental levels with development regulations that “dictate best stormwater management practices…..addressing both the quantity and quality of stormwater.”
* The Sparkill Creek is cited frequently in the Plan with concerns for existing environmental and flooding issues, including:
	+ Existing Conditions: “steep terrain …[and] the area’s land use patterns, results in flooding problems for the Sparkill Creek…” (I-21)
	+ “Another waterbody that defines the Town … and therefor requires a significant amount of protection, is the Sparkill Creek… The areas abutting the creek have been encroached upon by past development and are affected by uncontrolled runoff from surrounding areas, which adversely affect its drainage and environmental features.” (I-22)
	+ Flooding problems with in Orangetown are in general “the result of activities that took place prior to current regulations. These problems can be associated with development within the flood zone, lack of retention/detention facilities, stream encroachment, the filling of wetlands, insufficient sizing of drainage systems and culverts and the removal of vegetation. Flooding has also occurred in … the Clausland Mountain area …[where] Sparkill Creek is an important waterway…winding its way down steep terrain and through built-up areas and wetlands” (III-16)
* Plan Proposals and Area Studies include:
	+ Protection along the Sparkill Creek (III-8)
	+ Creation of a drainage district for the Sparkill (III-8)
	+ “Sparkill Creek and its tributaries…..deserve particular consideration. It is a goal of the Town of Orangetown to protect the ecological environment and water quality within the Sparkill Creek watershed … and require existing development along the creek to mitigate any adverse environmental impacts that may have occurred in the past.” (III-8)
	+ “Implementation of new stormwater regulations that require use of Best Management Practices to control non=point source pollution.” (III-16)
	+ “Since Sparkill Creek has been adversely impacted from past development, it should be protected so that any future development and redevelopment would not adversely affect it”. (IV-8)
	+ “Stream corridors, such as Sparkill Creek, require protection to insure that the impacts of new development do no cause excessive erosion of the streambed and stream bank and that water quality jmpacts from storm water are minimized.”
* Implementation includes:
	+ “Regulations should protect Sparkill Creek”
	+ The Implementation Technique tool of Wetland Protection should limit impacts on waterbodies etc. that “Could be applicable to protect areas around … Sparkill Creek…”
	+ “revision of the Zoning Ordinance including environmental protection regulations and watercourse diversion regulations…”

[Rockland County Comprehensive Plan – Rockland Tomorrow – 2011](http://rocklandgov.com/departments/planning/comprehensive-plan/)

 <http://rocklandgov.com/departments/planning/comprehensive-plan/>

* General protection streams and regulation within their 100 year flood plains. Sparkill Creek is one of 14 streams regulated by the County (p112).
* County supports MS4 compliance (p118).
* Recommendations (p 291) include
	+ Employing Green Development an Infrastructure Practices
	+ Adopting Regulations for Watershed Protection

[Draft Comprehensive Plan Update – 2011](https://www.orangetown.com/project/2003-comprehensive-plan-update-study/)

https://www.orangetown.com/project/2003-comprehensive-plan-update-study/

* Route 303 corridor, occupied by Sparkill Creek, is considered in this update noting:
	+ Additional improvements would enhance the roadway’s aesthetics, as well as traffic/safety concerns. Sparkill Creek runs along portions of Route 303, mostly as an unattractive drainage-way, rather than a design element, as suggested in the 2003 Comprehensive Plan.

D. Tang; Construction of GIS Database and Analysis of Land Use/Land Cover Change from 1953 to 1991 for Sparkill Creek Watershed; Hudson River National Estuarine Research, Hunter College; 1996

G. Ayer, H. Pauszek; Creeks, Brooks and Rivers in Rockland County, New York and Their Relation to Planning for the Future – Bulletin No. 6; NY State Dept. of Commerce; 1963

Sparkill Creek Drainage Basin; NY State Department of Health - Water Pollution Control Board; 1951

* Overview including a detailed examination of sewage pollution

Town Code: The Sparkill Creek is referred to in specific sections of the [Town code](https://ecode360.com/OR0091). <https://ecode360.com/OR0091>

**Flooding and Drainage Issues.**

Floods are well documented. Some recent photos are available [here](https://www.orangetown.com/project/sparkill-creek-watershed-flood-mitigation/)

[FLOOD MITIGATION & RESILIENCE REPORT Sparkill Creek - SD115; SLR; 2022](https://www.dec.ny.gov/lands/121102.html)

 <https://www.dec.ny.gov/lands/121102.html>

Goodkind & O’Dea Flood Control Analysis – 1999 and older studies cited therein. [Available here in Documents](https://www.orangetown.com/project/sparkill-creek-watershed-flood-mitigation/) => <https://www.orangetown.com/project/sparkill-creek-watershed-flood-mitigation/>

* November 1977 – Flood of record - 25 year storm (5.6”/24hr.). Flooding above Mill Pond Dam
* Flood Areas
	+ Valentine and Williams Street (bridge here subsequently replaced) 100 yr flood is 1.5’ above Valentine Ave.
	+ Carteret Rd (Rt 340) floods to depth of 1.5’ above road
	+ Industrial area north of Oak Tree Rd. Filled wetlands are subject to flooding.
	+ Oak Tree Rd and Washington St. Tappan – before replacement of Oak Tree Rd Bridge this area flooded to level of first floor of Tappan Firehouse and within inches of Tappan Library lower level.
	+ Rt 340 culvert at intersection of Rt 303. This culvert often floods resulting in overtopping roadway. Currently (2016) the adjoining drainage infrastructure on Rt 340 is being enhanced but the culvert remains unchanged.
	+ Spruce St culvert was replaced but floods still overtop the road as of report date.
* Recommendations (Summary p1)
	+ Improvements of bridges at
		- Valentine Ave (replaced now)
		- At first upstream crossing of Palisades Interstate Parkway (expansion)
		- Railroad (now rail trail) crossing at Orangetown Wastewater Treatment Plant (replaced now though recommendation was for elimination)
		- At culvert for access drive to Rockland County Sewer Plant
		- At NY St. 340 culvert at intersection of NY Rt 303 (Not included in current major improvements along Rt. 340)
	+ Non-structural improvements including land use controls, development policies, floodplain management and preservation of wetlands are discussed. A number of practices are listed (p 25-27). Except as related to later MS4 requirements it is likely that few have been implemented though some discussion has occurred. Most effort has gone into existing regulatory control (Drainage Agency) and Operational maintenance (OT Highway Department). No major incursions on the two significant wetlands have occurred since this report noted their value.

Sparkill Creek Flood Alleviation Study; Rockland County Drainage Agency; 1970

Site Flooding Studies - Several studies have been conducted in specific areas of concern including:

* Hydrology and Hydraulics Report for Existing Palisades Parkway Culvert in Sparkill Creek Tappan, NY 2013 – McLaren Engineering Group
* Sparkill Creek Pond Study at Ferdon Pond, 2017 – Collazuol Engineering
* Sparkill Creek Flood Study at Ferdon Pond. 2011 – Brooker Engineering

**Drainage District Planning**

Orangetown Drainage District analysis prepared by HDR/LMS Engineering – June 2006

* See [Table of Contents and selected sections](https://www.orangetown.com/project/sparkill-creek-watershed-flood-mitigation/) (<https://www.orangetown.com/project/sparkill-creek-watershed-flood-mitigation/>) highlighting flooding in the Sparkill Watershed
* Includes town-wide documentation of flooding issues.
* Also includes proposed engineering solutions – this approach needs reconsideration in light of more green-infrastructure based solutions

Hudson Valley Regional Council planning workshop for Sparkill Creek Watershed May 9, 2017: Emerging Stormwater Management Options for Protecting Streams & Water Quality: An Educational Workshop for Municipal Officials, Watershed Organizations and Other Stakeholders

**Green Infrastructure Ordinance Proposals**

* [RECOMMENDATIONS FOR A MUNICIPAL CODE UPDATE](https://www.orangetown.com/wp-content/uploads/Denker-GI-Report-11-9-14-S.pdf) - 2014

**Hydrological Data**

[Water Resources of Rockland County, New York, 2005–07, Heisig, USGS; 2010](https://pubs.usgs.gov/sir/2010/5245/figures.HTML) <https://pubs.usgs.gov/sir/2010/5245/figures.HTML>

Data from former USGS Gaging Station (see links) => [Map](http://superfund.ciesin.columbia.edu/sfund_files/imported/downloads/Rockland_USGS2.pdf)

* USGS 01376270 SPARKILL CREEK AT TAPPAN NY (1959 – 1966) <http://waterdata.usgs.gov/nwis/inventory/?site_no=01376270>
* USGS 01376275 SPARKILL CREEK AT TAPPAN STATION NY (1965 – 1966) <http://waterdata.usgs.gov/nwis/inventory/?site_no=01376275>
* USGS 01376280 SPARKILL CREEK AT SPARKILL NY (1959 – 1980) <http://waterdata.usgs.gov/nwis/inventory/?site_no=01376280>

**Water Quality and Ecological Assessments**

NY State Priority Waterbodies List

* Sparkill Creek Lower – Impaired - <https://www.dec.ny.gov/docs/water_pdf/section303d2018.pdf>
* Sparkill Creek, Upper – Needing Verification (of impairment – see Epstein PEERS study)

[Sparkill PEERS Water Quality Monitoring Final Report; Riverkeeper; 2022 [Nutrient Study for DEC]](https://www.riverkeeper.org/wp-content/uploads/2022/06/Sparkill-PEERS-Water-Quality-Monitoring-Final-Report.pdf) <https://www.riverkeeper.org/wp-content/uploads/2022/06/Sparkill-PEERS-Water-Quality-Monitoring-Final-Report.pdf>- and see presentation [here](https://youtu.be/aH2Tb35tMko) => https://youtu.be/aH2Tb35tMko

[Microbial Source Tracking in Sparkill Creek](http://www.sparkillcreek.org/maps-data): <http://www.sparkillcreek.org/maps-data>

* Increasing evidence supporting contributions of human sewage contamination beyond background levels of fecal indicators in Sparkill Creek. O’Mullan. *et al*; 2021

[Microbial Source Tracking Survey of Sparkill Creek](http://www.sparkillcreek.org/maps-data): <http://www.sparkillcreek.org/maps-data>

* Confirmation of methods and initial evidence supporting widespread human sewage contamination following rainfall; O’Mullan. *et al*; 2020

[Riverkeeper Citizen Science Pathogen Indicator Data 2010 - 2022](https://www.riverkeeper.org/water-quality/citizen-data/sparkill-creek/) https://www.riverkeeper.org/water-quality/citizen-data/sparkill-creek/

[Sparkill Creek Citizen Science Pathogen Indicator Project](https://www.hudsonriver.org/wp-content/uploads/2017/12/SCWA_CS_FinalReport.pdf); Sparkill Creek Watershed Alliance; 2015 <https://www.hudsonriver.org/wp-content/uploads/2017/12/SCWA_CS_FinalReport.pdf>

[Biological Stream Surveys, Rockland County – reports for 2008 – 2011; Watershed Assessment Associates](http://rocklandgov.com/departments/environmental-resources/protecting-our-streams-and-waterways/) <http://rocklandgov.com/departments/environmental-resources/protecting-our-streams-and-waterways/>

[Sparkill Creek Watershed Report Card; Rockland County](https://rocklandgov.com/files/2513/5394/1881/Sparkill.pdf) https://rocklandgov.com/files/2513/5394/1881/Sparkill.pdf

[Volunteer Stream Monitoring Data 2006 – 2010 – Rockland County](http://rocklandgov.com/departments/environmental-resources/protecting-our-streams-and-waterways/) http://rocklandgov.com/departments/environmental-resources/protecting-our-streams-and-waterways/

[NY DEC WAVE Program Stream Data](https://www.google.com/maps/d/viewer?mid=17UWrgF_OBkv34owgbmDy_KpC02U&ll=41.06629648623328%2C-73.93707392486573&z=15) https://www.google.com/maps/d/viewer?mid=17UWrgF\_OBkv34owgbmDy\_KpC02U&ll=41.06629648623328%2C-73.93707392486573&z=15

ROCKLAND COUNTY, NEW YORK LOTIC SCENE INVESTIGATION (LSI)
2007 STREAM BIOMONITORING WATER QUALITY PROJECT; Biological Stream Survey; Watershed Assessment Associates for Hudson Basin River Watch; 2008

A MODIFIED RAPID BIOASSESSMENT ON THE SPARKILL, ROCKLAND COUNTY, NY; J. Kelly Nolan; 2002

Rockland Shoreline Final Report - Biodiversity Assessment Training – Hudsonia - 2004

Preliminary Ecological Assessment of Sparkill Creek; Hudsonia Ltd, 1993

[NY DEC RIBS Monitoring Portal](https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=692b72ae03f14508a0de97488e142ae1) https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=692b72ae03f14508a0de97488e142ae1

Bacteria Trackdown – Desktop GIS Analysis; NY DEC; 2017 (draft version)

Analysis of Microbial Biodiversity in the Sparkill Creek Watershed *etc* ; B. Connors - Dominican College; NY State Water Resources Institute; 2015 (plus other unpublished studies at Dominican)

[Unpublished Presentations from St. Thomas Aquinas College including: Microplastic accumulation in wetlands of the Sparkill watershed. Wentzell et al ; 2019](https://www.stac.edu/academics/school-stem/our-faculty/bianca-wentzell) - https://www.stac.edu/academics/school-stem/our-faculty/bianca-wentzell

[Groundwater Contamination - Ongoing Investigation - Northvale NJ 2010](https://www.dec.ny.gov/data/der/factsheet/344082riwp.pdf) https://www.dec.ny.gov/data/der/factsheet/344082riwp.pdf

[Groundwater Contamination Blauvelt NY – Materials Research and others](https://www.dec.ny.gov/data/der/factsheet/c344070cuprop.pdf) <https://www.dec.ny.gov/data/der/factsheet/c344070cuprop.pdf>

[Groundwater Contamination – Orangeburg, NY – Greenbush Rd](https://www.dec.ny.gov/data/der/factsheet/c344078cuprop.pdf) https://www.dec.ny.gov/data/der/factsheet/c344078cuprop.pdf

[Remediation Sites Map](https://gisservices.dec.ny.gov/gis/dil/) - https://gisservices.dec.ny.gov/gis/dil/

Groundwater Monitoring Data – MTBE and other Contaminants; Rockland County Department of Health; 2003

**Hudson River studies at the Piermont Marsh and Sparkill Creek**

Water quality and its effect on wetlands – Numerous Studies – e.g. [O’Mullan and Juhl etal](https://www.qc.cuny.edu/academics/sees/faculty-research-gregory-omullan/) at Columbia University and Queens College <https://www.qc.cuny.edu/academics/sees/faculty-research-gregory-omullan/> and [Findlay at Cary Institute](https://www.caryinstitute.org/sites/default/files/public/downloads/curriculum-project/changes_in_water_quality_in_wetlands_background_information.1.pdf) -https://www.caryinstitute.org/sites/default/files/public/downloads/curriculum-project/changes\_in\_water\_quality\_in\_wetlands\_background\_information.1.pdf

The [Piermont marsh](https://hrnerr.org/visit/piermont-marsh/) a Hudson River National Estuarine Research Reserve site. As a valuable resource it has been studied extensively. <https://hrnerr.org/visit/piermont-marsh/>

**GIS Tools**

[Sparkill Creek Watershed Geospatial Data Catalog (2014)](https://docs.google.com/spreadsheets/d/1PQH0KFyalR6VyIYf6fBaBQL4vQgAzYvHSjM8LkZWmks/edit?pli=1#gid=483891868) <https://docs.google.com/spreadsheets/d/1PQH0KFyalR6VyIYf6fBaBQL4vQgAzYvHSjM8LkZWmks/edit?pli=1#gid=483891868> plus SCWA custom layers are available

**Historical**

[Story Map of the Sparkill – Overview, Ecology and History](https://www.arcgis.com/apps/Cascade/index.html?appid=44d9ed8f90b3439293a4e8002075ef3a) https://www.arcgis.com/apps/Cascade/index.html?appid=44d9ed8f90b3439293a4e8002075ef3a

History section of: Designing a Watershed Based Environmental Learning Center: A proposed Master Plan; G. Mercurio;

Historical Areas of the along the Creek: Piermont Draw Bridge; Rockland Rd Historical District; Tappan Historical District