

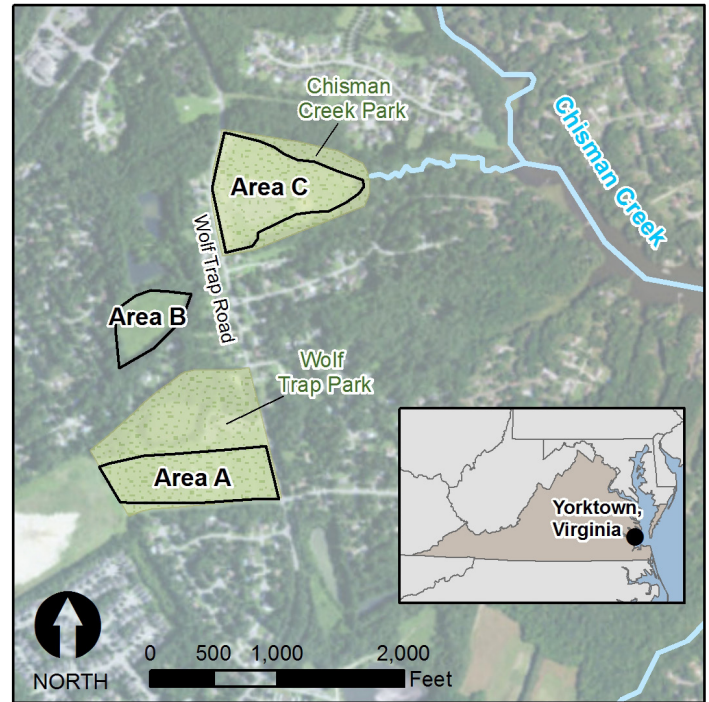
Introduction

Before the Chisman Creek Superfund site was cleaned up, it was unusable land that provided no benefits to the local community. Now the site has been transformed into two jewels of the York County, Virginia, park system. This case study tells the story of one of the first Superfund sites in the country, and how its pioneering redevelopment continues to be an example of success 25 years later.

The Chisman Creek Superfund site is near historic Yorktown and the Hampton Roads metropolitan area. Chisman Creek flows into the nearby Chesapeake Bay, one of the world's most important estuaries. Site contamination resulted in the site's listing as one of the country's earliest Superfund sites. After EPA selected a remedy for the site, the responsible party, Dominion Energy Virginia, conducted the cleanup with oversight by EPA and the Virginia Department of Environmental Quality (VDEQ).

With leadership from Dominion and York County, the site became the first Superfund site in the nation to be redeveloped after cleanup. With EPA's support, Dominion designed the remedy to allow for recreational use. The site, owned by Dominion and under long-term lease to the county, is now home to two popular athletic parks, used by several sports leagues with over 1,000 players.

For the past 25 years, the operation and maintenance of the site's remedy has gone hand-in-hand with the site's continued recreational reuse. The ongoing collaboration between Dominion, York County, VDEQ and EPA ensures that the site continues to protect human health and the environment while providing recreational opportunities for the community.



Areas A and C of the Chisman Creek site have been redeveloped as Wolf Trap Park and Chisman Creek Park.

This case study offers lessons learned for other communities considering recreational reuse of cleaned-up Superfund sites and other formerly contaminated lands. In addition, the case study highlights the site's long history of successful reuse, providing guidance for other communities on ways to protect public health while supporting beneficial reuse.



Wolf Trap Park (left) and Chisman Creek Park (right) provide much-needed sports fields for the local community.

Site History, Contamination and Remediation

From 1957 to 1974, a contractor for the Virginia Electric and Power Company, a subsidiary of Dominion, disposed of ash from the Yorktown Power Station. The ash was left over from burning coal and petroleum coke to produce electricity.

The contractor placed the ash into four abandoned sand and gravel pits along Wolf Trap Road, about 2 miles from the power plant. About 500,000 tons of ash were deposited at the site before the power plant was converted to burn fuel oil in 1974.

In the early 1980s, state agencies investigated the site and found heavy metals in groundwater and surface water. In response, EPA placed the site on the National Priorities List in 1983.

EPA conducted a remedial investigation from 1984 to 1985 to determine the extent of contamination. The U.S. Fish and Wildlife Service conducted a second remedial investigation, in 1987, to evaluate site impacts on fish and wildlife.

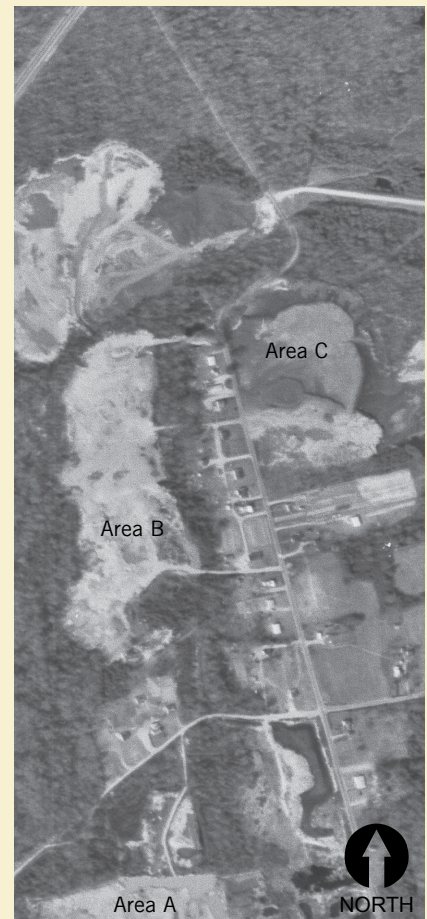
In 1986 and 1988, EPA issued Records of Decision describing the remedies selected to address site risks. Dominion agreed to carry out the cleanup and completed remedy construction in 1988. With funding from Dominion, the Newport News Water Works extended the public water supply to 55 homes near the site; York County connected the homes to the waterline.

Dominion installed a system of horizontal drains to collect contaminated groundwater at Area C. At first, collected groundwater was treated at an on-site treatment plant; in 1994, EPA decided to send the groundwater for treatment at the local wastewater treatment plant because the water met the plant's pretreatment requirements. In 2016, Dominion augmented the collection system by adding an interceptor trench along the western side of Area C. In 2017, Yorktown Power Station, which manages the horizontal drain system, received the Diamond Award for Pretreatment Excellence from the Hampton Roads Sanitation District. The award reflected 18 consecutive years of perfect permit compliance.

Dominion placed a low-permeability cap over Area C and soil caps at Areas A and B to prevent human contact with the ash and to reduce the amount of rainwater soaking into the ash. Dominion also relocated about a half-mile of stream next to Area C and filled in the old streambed to prevent exposure to contaminated sediments.

An environmental covenant recorded by Dominion in 2013 prohibits groundwater use and restricts digging at the site. Dominion continues to monitor site groundwater and surface water to assess the remedy's effectiveness. In addition, EPA and VDEQ review the site every five years to identify any actions that may be needed to ensure the site continues to be protective of human health and the environment. The site's cleanup played a role in a larger water-quality improvement effort that led to the reopening of the Chisman Creek estuary for private and commercial fishing.

For more information on the site's history and cleanup, please see <https://www.epa.gov/superfund/chismancreek>.



This 1963 photo shows the site when the sand and gravel pits were active and ash disposal had begun.

Project History

1986

The Community Makes Its Voice Heard

Chisman Creek was one of the first places in the country that EPA designated as a Superfund site. During the early years of the Superfund program, EPA focused on addressing urgent public health concerns at long-ignored sites, and had not yet begun to consider the importance of post-cleanup redevelopment. In fact, EPA’s initial plan was to install a chain-link and barbed-wire fence around the site after cleanup. However, local residents, Dominion and other groups objected to fencing the site and leaving it vacant, and made their opinions clear to EPA during the public comment period that the Agency held in 1986 before deciding on a cleanup plan for the landfills.

As the owner of the site, Dominion played a crucial role in determining the site’s future use. Fortunately, Dominion was willing to explore possible future uses for the property. Discussions with York County officials identified a pressing local need for playing fields.

In the 1980s, York County was one of the fastest-growing counties in Virginia. With its growing population, the county was facing a shortage of athletic fields. “In fact, the county had no athletic fields other than school fields,” said Brian Fuller, York County’s director of community services. So, when Dominion approached county officials to discuss reuse ideas,

Stewardship Committee Seconds the Community’s Call for Reuse

In 1986, the York County Board of Supervisors organized a Stewardship Committee, an advisory board for the Chisman Creek site. The committee included about a dozen members – local residents and businesspeople as well as representatives of organizations such as the Chesapeake Bay Foundation, the Virginia Institute of Marine Science, and the College of William and Mary. The Stewardship Committee submitted comments to EPA during the public comment period by way of a resolution of the County Board of Supervisors. The committee’s comments included a call to avoid building chain-link and barbed-wire fencing at the site.

county officials urged Dominion to explore the possibility of hosting sports fields at the site after cleanup. As a long-time member of the community, the company was motivated to make an extra effort to turn the site into a positive asset for the community. In consultation with York County, Dominion drew up a conceptual plan for athletic fields and shared it with the community. The Stewardship Committee and the York County Board of Supervisors both endorsed the plan.

Timeline of Events

1957-1974	Disposal contractor places ash in sand and gravel pits
1980	Nearby resident raises concern about well water
1980-1981	Virginia State Water Control Board and State Board of Health investigate the site and test residential wells near pits
1983	EPA places the site on the National Priorities List
1984-1985	EPA investigates site contamination
1986	York County Board of Supervisors organizes Stewardship Committee to comment on the site’s proposed cleanup
1986	EPA selects a remedy for the pits and groundwater
1987	U.S. Fish and Wildlife Service studies site impacts on fish and wildlife
1988	EPA selects a remedy for surface water
1988	Dominion completes construction of the site remedy
1991	York County opens Chisman Creek Park softball fields
1992	York County opens Wolf Trap Park soccer fields
2008	Dominion and York County install concrete drainage channels to address erosion at Chisman Creek Park
2013	Dominion records environmental covenant to prohibit groundwater use and restrict digging
2016	Dominion installs groundwater interceptor trench at Chisman Creek Park
2017	Dominion receives Diamond Award for Pretreatment Excellence for 18 years of perfect permit compliance
2017	Chisman Creek Park hosts National Softball Association’s Girls Fast-Pitch Class A World Series
2017+	Dominion, York County and EPA continue to work together to maintain the parks and ensure the site’s protectiveness

1987 – 1988

A Remedy Tailored for Recreation

After considering the community's input and with VDEQ's concurrence, EPA selected a cleanup plan for the landfills in September 1986. In its decision document, EPA emphasized the community's "strong preference" for not fencing off the site and noted that "community members are adamantly opposed to a remedial solution which would render the pit areas completely unusable." The community had spoken loud and clear – local residents, county officials, the property owner and non-governmental organizations all urged EPA to allow the site to be returned to productive use, with recreational facilities at the top of the community's wish list.

The final step in laying the groundwork for recreational reuse was securing EPA's approval. At a meeting in late 1986, Dominion's environmental contractor presented the conceptual plan for sports fields at the site to EPA. Former EPA site manager Chris Corbett said that "EPA's project managers immediately supported the plan" – they saw that recreational reuse could be compatible with a protective remedy.

With EPA and VDEQ on board with the proposed plan, Dominion worked with York County to configure the remedy to support soccer fields on one part of the site and softball fields

on another part. "The entire design was done with the reuse in mind," said Corbett. Grading of the caps was designed to allow for a level playing surface. In addition, "clean corridors" were planned for the parks' underground electric lines to allow for lighting towers at the softball fields. The electric lines were placed in concrete conduits, allowing for utility workers to access them in the future without coming in contact with contamination.

As part of constructing the site's caps, Dominion installed the parks' ground features – the playing fields, the utilities and foundations for the restroom facilities. After Dominion completed the ground features, York County finished the parks, building sidewalks, restroom facilities and parking lots, and establishing grass playing surfaces. The county also purchased a lighting system for the softball fields, which Dominion installed during the final stages of cleanup.

1991 – 1992

Play Ball!

On May 4, 1991, York County hosted the grand opening of Chisman Creek Park. About 300 local residents, Dominion officials, and EPA, state and county personnel gathered to celebrate the opening of the 13-acre park with its two full-size, lighted softball fields. In the spring of 1992, the county opened Wolf Trap Park. The 28-acre park includes two full-size soccer fields and two smaller, instructional-size soccer fields.

Chisman Creek Park and Wolf Trap Park have become an integral part of York County's park system, with both parks in high demand. According to sports league organizers, the local adult softball leagues and the local youth travel soccer league might not exist without these parks. The 24 teams and over 600 players in the area's three adult softball leagues play most of

EPA and Reuse

Since the inception of the Superfund program, EPA has been building on its expertise in conducting site characterization and remediation to remove barriers to the reuse of cleaned-up properties. Today, consideration of future use is an integral part of EPA's cleanup programs, from initial site investigations and remedy selection through to the design, implementation, and operation and maintenance of site remedies.



“York County’s website tells the story of the parks and their cleanup. The county is proud to have participated in building these parks. Some of the county residents who played on these fields when they were young now have children who play on these fields.”

– Brian Fuller, York County director of community services



Chisman Creek Park's two lighted softball fields are home to three adult softball leagues. They also provide practice space for youth soccer teams.



Yorktown FC, the area's youth travel soccer league, is one of several sports leagues making good use of Wolf Trap Park and Chisman Creek Park.

their games at Chisman Creek Park's two softball fields. The soccer fields at Wolf Trap Park are "the lifeblood of Yorktown FC," the area's youth travel soccer league, according to league organizer Jeff Sykes. With 15 teams and about 300 players ages 7 to 18, Yorktown FC plays at Wolf Trap Park six days a week. When daylight is short, Yorktown FC makes use of the lighted softball outfields at Chisman Creek Park for soccer practice. The county's youth soccer league and the local high school's soccer teams also use Wolf Trap Park for games and practice.

Given the area's sustained population growth and the thriving popularity of youth field sports – soccer, baseball, football, lacrosse and others – Yorktown FC organizer Jeff Sykes noted that "playing fields, especially lighted playing fields, are a valuable commodity in the area. Wolf Trap Park and Chisman

Setting a Standard of Excellence

- The National Environmental Awards Council presented an Environmental Achievement Award to EPA, York County and Dominion for their partnership in coordinating site cleanup and redevelopment.
- The Consulting Engineers Council of Pennsylvania recognized the engineering firm that designed the site's drainage system, clay cap and recreational facilities with the Council's Grand Conceptor Award.
- Shortly after the parks opened, they were named "Best New Facility" by the Virginia Recreation and Park Society.

Creek Park are centrally located in the county and the fields are irrigated, so they are very nice fields."

"The accomplishments at the site are twofold. First and foremost, Dominion is taking care of our environmental obligations. Secondly, lots of people are using the parks; they are a valuable asset for the county. It was good to transform a contaminated site into two useful parks."

– Donald Hintz, Dominion site manager

"Having Wolf Trap and Chisman Creek Parks available as high-quality recreation facilities for our citizens to use has been a tremendous asset to York County. Since the parks opened, they have hosted thousands of games and visitors, and we have received numerous compliments about the quality of the fields. These fields will continue to be an important part of York County's parks and recreation programming for years to come."

– Mark Carter, York County deputy county administrator



25 Years Later, Reuse and Remedy Continue

1993 – 2017+

The Partnership Continues...

With its 25-year history of recreational reuse, the Chisman Creek site provides a valuable case study for other communities thinking about redeveloping cleanup sites. The key lesson is that recreational reuse can continue to be compatible with remedy protectiveness over the long term, provided that each stakeholder – responsible parties, facility operators and environmental agencies – fulfills its obligations diligently, and all parties work together in good faith toward a common goal.

“Dominion has a very good relationship with the county. It’s in all parties’ best interests to work together – it’s a cooperative project. Dominion avoids doing work during sporting events. Whenever a need comes up, Dominion and the county negotiate a resolution.”

– Donald Hintz, Dominion site manager

Various safeguards are in place to maintain the site’s protectiveness over time. The county inspects the parks regularly for erosion and shares a monthly report with Dominion. Dominion’s project manager visits the site about every two weeks. An environmental covenant restricts groundwater use, excavation and construction at the site. In addition, EPA will continue to review the site’s remedy every five years, as required by law, to ensure that it continues to

be protective of human health and the environment. EPA’s most recent five-year review, in 2016, found that the site “is currently protective of human health and the environment,” and identifies specific actions that will be taken to ensure continued protectiveness.

York County leases the park properties from Dominion for a payment equal to their property taxes. The 60-year lease agreement defines each party’s responsibilities, setting the stage for successful cooperation. Dominion remains responsible for the site’s environmental liabilities, while the county takes care of normal park maintenance. The lease agreement stipulates that the county will notify Dominion before doing any digging at the parks. Brian Fuller, York County’s director of community services, reflected that “the county has a great relationship with Dominion. Anytime any minor issues have come up, we have worked together to address them.” This cooperative relationship is crucial as the two parties must work together to address maintenance needs. For example, soon after Chisman Creek Park opened, it became apparent that the groundwater collection system was so effective that it made the soil too dry to support grass. The county worked with Dominion to install an irrigation system, allowing the turf to flourish. In 2003, burrowing animals and heavy rains caused two areas of subsidence; the county and Dominion jointly repaired the problem. And again, in 2008, when work was needed to address erosion at Chisman Creek Park, the county and Dominion shared the cost for regrading and constructing a concrete drainage ditch.

The ongoing cooperation between the county and Dominion, along with oversight from EPA and VDEQ, maintains the protectiveness of the remedy without impeding the use of these highly popular parks. After 25 years of successful reuse, the productive partnership at the Chisman Creek site serves as an example to communities across the country as they strive to achieve and maintain successful reuse of their own cleanup sites.



The soccer fields at Wolf Trap Park are “the lifeblood of Yorktown FC,” the area’s youth travel soccer league.

Lessons Learned

EPA, Dominion and county staff emphasize that early reuse planning was key to the site's successful redevelopment. Former EPA site manager Chris Corbett advises people attempting to redevelop contaminated sites to "coordinate very closely with the property owner and the community, early in the cleanup process." Dominion began discussing reuse options with the county very early in the cleanup process, before EPA had selected the remedy. In addition, the county formed a Stewardship Committee to inform site cleanup and reuse planning. Together, Dominion, the county and the Stewardship Committee presented a unified voice to EPA calling for the site to be able to be redeveloped for recreational use. **This was the first step toward achieving a successful post-cleanup reuse – deciding on a preferred land use and communicating it to EPA.**

“Explore the reuse possibilities – don’t be afraid. You don’t have to put a fence around the area – it can become a good asset to the community.”

- Brian Fuller, York County director of community services

Reuse planning early in the cleanup process means that cleanup plans can take future use considerations into account. At the Chisman Creek site, Dominion worked with the county to design the sports fields during the remedial design stage of the process. These early planning efforts allowed for several vital reuse elements to be incorporated, including proper slopes for the fields and clean utility corridors to allow for lighting. Former EPA site manager Eric Newman encourages stakeholders to plan for reuse before a remedy is selected so that fundamental design aspects, such as the depth of excavation and the load-bearing capacity of the cap, can be designed to be compatible with the planned reuse.

Waiting to think about future use until after cleanup can limit reuse possibilities. York County director of community services Brian Fuller emphasizes the need to think carefully during the design phase about reuse infrastructure requirements (such as structures, light supports and underground utilities). For example, if the site's remedy prevents planting trees, consider constructing pavilions to provide shade. Once a remedy is in place, modifying the facility's structures can be expensive and time-consuming.

The spirit of cooperation between EPA, VDEQ, Dominion, York County and the community was vital to the project's success. Mark Carter, York County's deputy county administrator, says the county has "enjoyed a great



Chisman Creek was one of the first Superfund sites in the country, and its successful redevelopment continues to lead the way as an example of recreational reuse for other Superfund sites.

partnership with Dominion Energy in developing these parks and working with them over the years in monitoring their use." All stakeholders worked together toward common goals – protection of public health and the environment and beneficial recreational reuse. Dominion's commitment as a long-term stakeholder in the area motivated the utility to work hard to support a site redevelopment project that would benefit the community.

“Keeping an open mind about redevelopment options is important for a successful reuse project,” says EPA project manager Andrea Bain. For example, remedial design engineers who are willing to think outside the box can help facilitate redevelopment. At the Chisman Creek site, Dominion's environmental contractors helped conceptualize the site's recreational reuse and designed the remedy to allow for that reuse.

Site stakeholders offer several additional pieces of advice to communities seeking to redevelop cleaned-up sites for recreational use:

- The responsibilities of the facility operator and of the party responsible for the cleanup should be clearly defined.
- The recreational facility's manager should understand the site's environmental issues.
- Appropriate land use restrictions should be implemented and enforced.
- The recreational facility should be monitored regularly. This responsibility can be shared by the facility operator and the responsible party.
- If some areas of a site are not intended for public use, access to those areas should be restricted.

“Think out of the box. Take the initiative to make reuse happen.”

- Donald Hintz, Dominion site manager

Bigger Picture

In addition to the lessons learned described above, the redevelopment of the Chisman Creek site exemplifies some bigger-picture themes:

Responsible parties and site owners are important stakeholders who can contribute to restoration and reuse planning activities as well as cleanup discussions.

At the Chisman Creek site, having a cooperative responsible party who owned the site was key to its successful redevelopment. Dominion worked with York County and the community to urge EPA to take reuse considerations into account as part of cleanup planning, at a time when EPA had not yet focused on supporting the reuse of cleaned-up sites.

While EPA provides tools and resources to support Superfund reuse, communities and public- and private-sector organizations make it happen.

EPA's mission is to protect human health and the environment. EPA relies on engaged community stakeholders to bring their land use goals and priorities to the table and discuss them in the context of site cleanup planning opportunities and constraints.

Utilities and other responsible parties with a continuing presence in a community can foster goodwill by supporting reuse projects that benefit the community.

Rather than doing only the minimum cleanup required, Dominion created an asset that demonstrates its commitment to the community.

Local governments can play a unique leadership role in reuse planning projects.

By forming the Stewardship Committee and coordinating with the responsible party, York County was able to proactively and productively provide input for the cleanup process and secure a preferred post-cleanup land use.



One of the four soccer fields at Wolf Trap Park.



Soccer practice at Wolf Trap Park.

Communication, collaboration and relationship building are vitally important parts of reuse planning projects.

A model of public-private partnership, the cleanup and recreational reuse of the Chisman Creek site shows how goodwill and imagination can turn a wasteland into a productive facility and a source of civic pride.

Recreational reuse on closed landfills is compatible with long-term, ongoing protectiveness.

For 25 years and counting, Chisman Creek Park and Wolf Trap Park have demonstrated that, with the proper planning, execution and ongoing maintenance, recreational parks can be a viable reuse option for Superfund sites and other cleanup sites.

Continued collaboration is essential for continued reuse success.

At sites with contamination remaining on site, ongoing cooperation between the responsible party, the site operator and regulatory agencies will be necessary to ensure that the site continues to be safe into the future.

Conclusion

The Chisman Creek site was one of the first Superfund sites in the country, and the first Superfund site to be redeveloped after cleanup. Today, it continues to serve as a leading national example of what can happen when site owners, responsible parties, communities and regulators work together on remedies that protect public health and the environment and enable productive and beneficial reuse. The longevity of the project's success – Chisman Creek Park and Wolf Trap Park are now both more than 25 years old – illustrates that the benefits of Superfund redevelopment are here to stay. Looking forward, York County, Dominion, VDEQ and EPA will continue to work together to keep the parks in excellent condition as the next generation of players takes the field.

Pioneering Recreational Reuse

THE CHISMAN CREEK SUPERFUND SITE IN YORK COUNTY, VIRGINIA

Sources and Resources

Sources

Images for this case study are from Yorktown FC, York County, Dominion and EPA.

Map Sources

The map for this case study was created with data from Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, swisstopo, the GIS User Community, DeLorme, AND, Tele Atlas, First American, UNEP-WCMC and URS.

Resources

Chisman Creek Reuse Snapshot

<https://www.epa.gov/superfund-redevelopment-initiative/superfund-sites-reuse-virginia#chisman>

EPA Site Profile

<https://www.epa.gov/superfund/chismancreek>

Other Cleanup Sites with Recreational Reuse

<https://www.epa.gov/superfund-redevelopment-initiative/superfund-sites-green-space-reuse>

Reusing Superfund Sites: Recreational Use of Land Above Hazardous Waste Containment Areas

<https://semspub.epa.gov/src/document/HQ/174085>

U.S. Soccer Foundation Partnership

<https://www.epa.gov/superfund-redevelopment-initiative/superfund-redevelopment-partnerships#soccer>



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