CONSTRUCTION SITE POLLUTION

It’s not just trash getting left behind……

Sue Allen
Environmental Health Specialist
Registered Sanitarian

AGENDA

CONSTRUCTION INDUSTRY DISCHARGES

- CONCRETE
- SEDIMENT
- GEOTHERMAL
- EFIS
- BEST MANAGEMENT PRACTICES

CONSTRUCTION INDUSTRY

- Major source of pollution
- More water pollution incidents than any other industry
- Chemical
- Solid Waste, Noise, Dust

CONCRETE IN WATER

Bethesda Reconstruction Home Site.

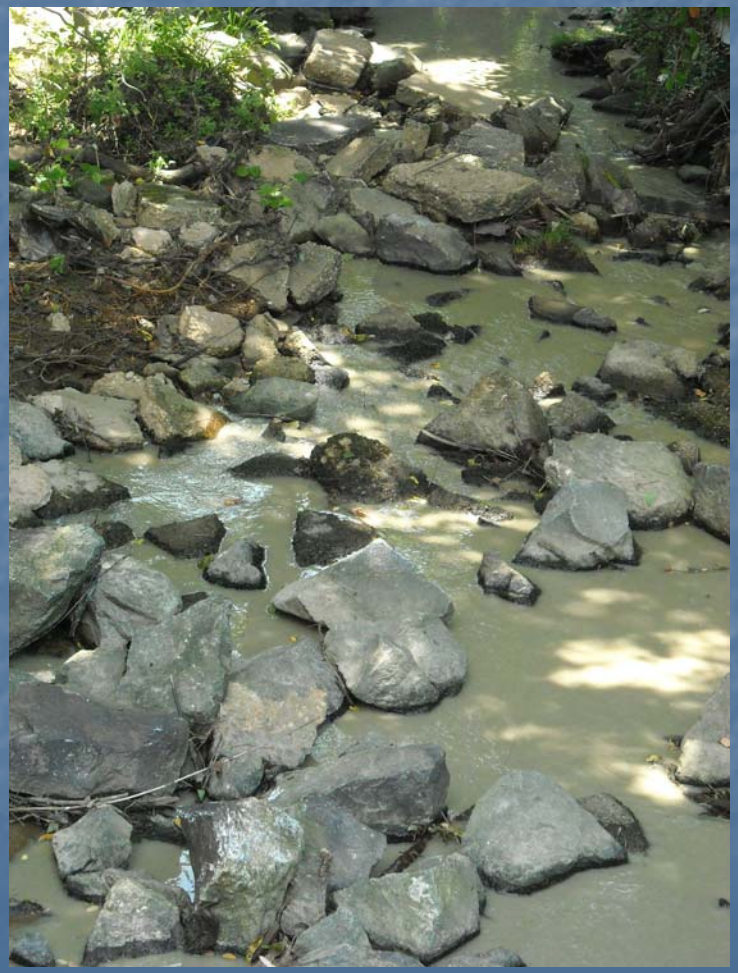
South Lawn Tributary in Rockville near a concrete plant.

CONCRETE DISCHARGES

A contractor blatantly dumped cement slurry along a Gaithersburg road. A citation was issued.

CONCRETE DISCHARGES

Travilah Road, Rockville



Washout Pit

CEMENT'S EFFECT

- Lime in cement produces an alkaline solution that can then burn and kill fish, insects and plants.
- Concrete wastewater – pH of 12-13.
- Fresh water – pH-6-7.

Native trout with cement burns.

CEMENT WASTEWATER

Eels up to 50 years of age killed by cement wastewater.

LOCAL AREAS OF CONCERN

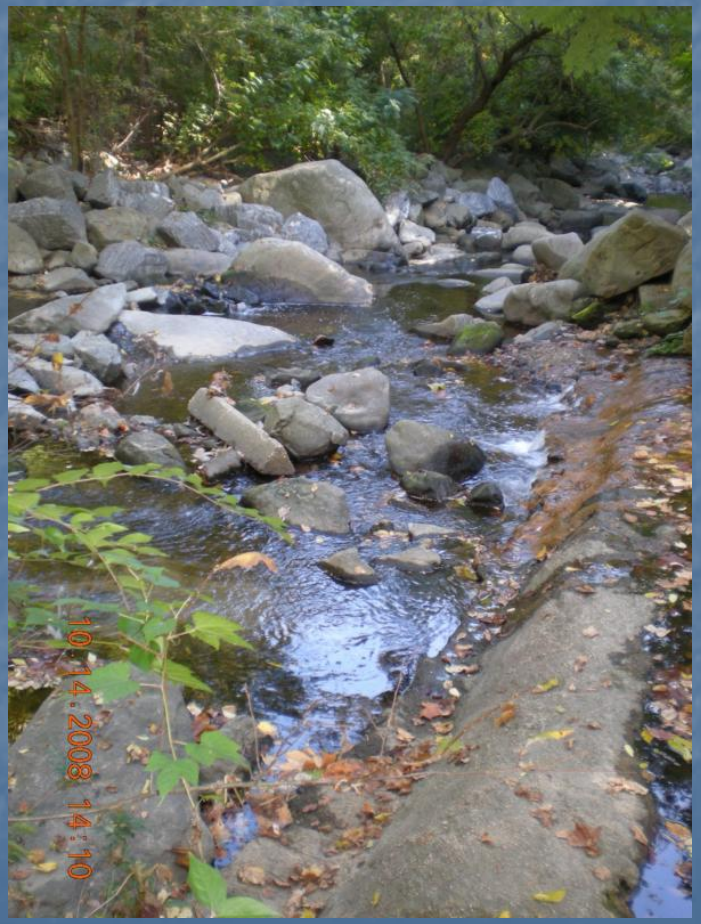
Brashear's Fall at Maple Ave. & Sligo Creek Parkway, Takoma Park.

BRASHERS' FALLS

ON A BAD DAY

MORE BAD DAYS @ BRASHEARS FALLS

BETTER DAYS @ BRASHEARS FALLS



LOCAL AREA OF CONCERN

Rock Creek along Beach Road. In Garrett Park.

BEST MANAGEMENT PRACTICES

Hay Bales Guarding Drainage Inlet

Storm Drain Inlet Protection

BEST MANGEMENT PRACTICES

Stone Tracking Pad

Staked Silt Barrier

Silt Fence

SEDIMENT IN WATER

- Greatest pollutant by volume.
- Transports PCB's, Fertilizers, Pesticides, Metals, Oils, Greases.
- Gets stored on hilltops, floodplains damaging river environment.
- More than 90 MD streams & rivers are "impaired " by excessive sediment.

SEDIMENT DICHARGE

MICHIGAN'S ROUGE RIVER

SEDIMENT MOVEMENT OF THE GREAT LAKES

SEDIMENT DISCHARGES

Rock Creek Stream Valley Park by National Park Seminary.

Bordering Construction Site.

SEDIMENT DISCHARGES

Destruction of Property

Sediment –Clogged Storm Drain

Collapsed Silt Fence

BEST MANAGEMENT PRACTICES

Permanent retaining wall

Sod Stabilization

Sediment Bale Barrier

Compliance Inspectors

SEDIMENT BASINS

Sediment basins protect natural resources.

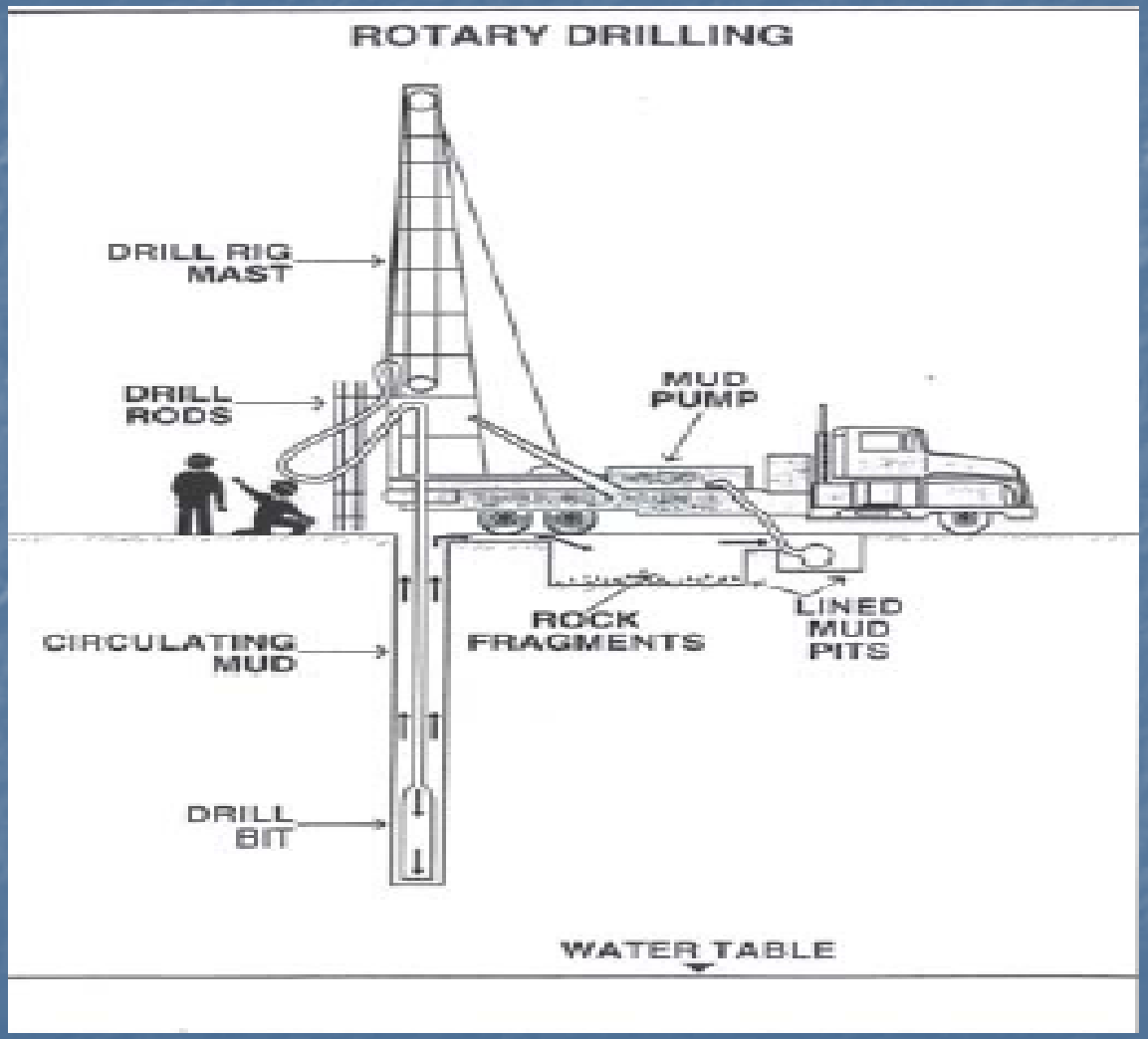
Temporarily detain runoff on construction sites.

GEOTHERMAL RECOVERY

The natural heat storage capacity of the earth or ground water can provide energy efficient heating & cooling.

Geothermal Heat Pump

WELL DRILLING



- Cuttings are flushed upward.
- In hard rock areas, compressed air blows fragments to surface.
- Without solid containment, ground water mixed with sand, gravel & clay can be discharged.

WELL DRILLING OPERATION

22 wells were being installed on this site for geothermal recovery to heat and cool the building.
Each well is about 375’ deep.

Cuttings from the well drilling were found to be leaving the site through the storm drain system.

AFFECTED OUTFALL

GEOTHERMAL DISCHARGES

BEST MANAGEMENT PRACTICES

Sediment filter bag

Hydroseeding

Grading

Terraces

SNOWSTORM OF MAY 2009

ALL DUE TO EXPANDED POLYSTYRENE PARTICLES (EPS)

Hilton Garden Inn Bethesda Construction Site.

LAND/SOIL POLLUTION

FROM AIR & LAND TO WATER POLLUTION

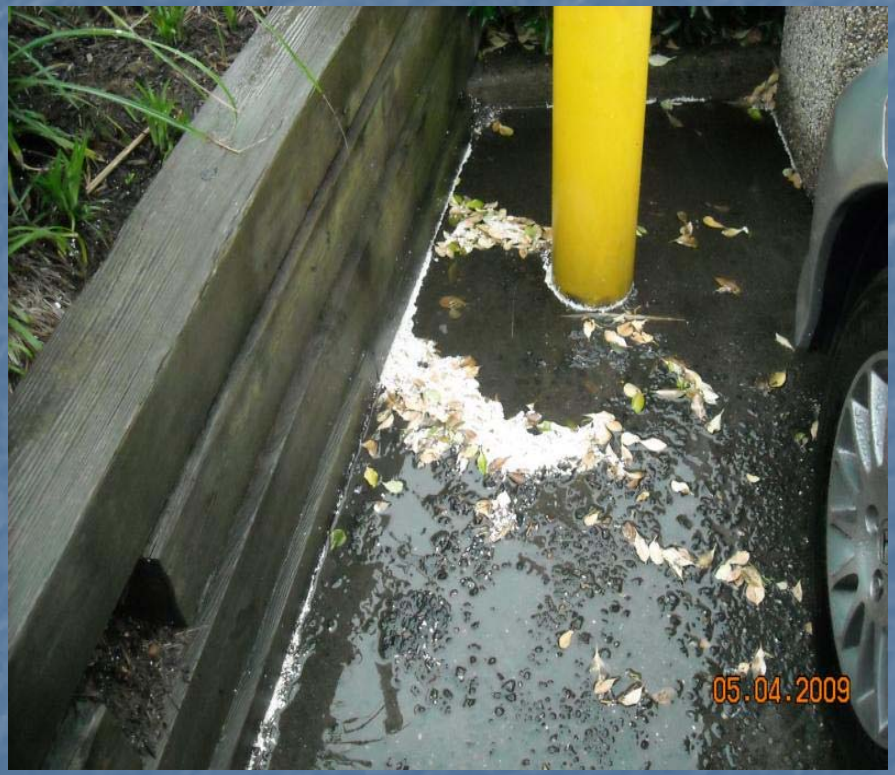
WATER POLLUTION

WATER POLLUTION

Stormwater Inlet

Utility Grates By Site

WATER POLLUTION



ENVIRONMENTAL NEWS

Showers Of Plastic Disconcert Bethesda

County Warns Construction Firm

By Miranda S. Spivack
Washington Post Staff Writer

Mike August, a partner in a Bethesda ad agency, arrived at work one recent day to find the parking lot covered in a mysterious white substance.

"It looked like snow," August said. Never mind that the temperature was in the 50s.

He traced the substance, a combination of plastic foam bits and fine dust, to a Hilton Garden Inn under construction across the street. A county inspector soon issued a violation notice to Donohoe Construction, ordering the company to clean up the site and change its construction practices. A company official agreed to do so, according to Montgomery County records.

But the problem, which began in late March, continued as recently as yesterday, despite eight more visits from county environment officials, three citations totaling $1,500 in fines and a threat by the county to withdraw the building permit.

County officials said the mix of dust and plastic foam — caused by sanding on the side of the hotel — is not a health hazard.

Even so, residents and occupants of nearby office buildings said they are worried. Yesterday, Carole Brand, a former Parent Teacher Student Association president at Bethesda-Chevy Chase High School, was proctoring an exam for students in a nearby office building when she noticed particles floating in the air.

"So you are breathing this stuff in downtown Bethesda," she said. "You are not supposed to be breathing fine particles. I covered my mouth when I left the building.

See FOAM, Page B8

Showers of Plastic Foam Particles Linked to Hotel Construction

FOAM, *From Page B1*

It is not solved."

Officials from Donohoe, a major construction firm in the Washington area, did not return phone calls and e-mails seeking comment. Donohoe has not been cited for any other environmental violations in Montgomery in the past six years.

County law requires builders to take "reasonable precautions" to minimize airborne pollution, county spokeswoman Esther Bowring said.

County records and interviews with occupants of nearby offices show that throughout April and early this month, fine dust and bits of plastic foam were often seen in the air near the construction site, on Waverly Street in downtown Bethesda. The particles covered streets, cars and grassy areas, and they blew into a stream in the nearby Georgetown Branch walker-biker trail.

Officials grew increasingly concerned after receiving repeated calls from nearby office buildings that the construction site was creating "a pollutant, litter and a nuisance," Bowring said.

A county inspector, Susan Allen, visited the site several times, documenting the company's failure to comply with requests to clean up the area and minimize particles and dust.

At times, when Allen was nearby, workers appeared to stop the activity that was creating the particles. Finally, Allen went to an office building for a different vantage point. According to county records, she documented that workers were not using the vacuums and techniques that company officials had promised would be used to minimize the problem.

County officials threatened to issue a stop-work order and revoke the building permit. During a May 5 meeting, Donohoe representatives agreed to take steps to improve the site. In an e-mail summarizing the discussion, Donohoe's development director, Steven J. VanDorpe, said that most of the particles had been contained. Wind and traffic made it difficult to prevent dispersal of the particles, he wrote.

The company agreed to put up netting, bring in extra cleanup crews and use vacuum-equipped tools and other construction techniques to minimize the dispersal of particles.

"This project has been ongoing for over 18 months with minimal impacts to date," VanDorpe said in his e-mail to county officials. "We certainly regret this recent event and sincerely apologize for any inconvenience or worry it has caused."

Last week, workers put up the netting and began taking other steps to minimize the particles.

But on Saturday, August's business partner, Chuck Husak, was at his office and saw particles flying.

A coating of plastic foam particles and dust has appeared on the ground repeatedly around a hotel construction site in downtown Bethesda. Montgomery County officials say the combination is not hazardous, but they have cited the construction firm and threatened to withdraw the building permit.

And yesterday, the particles were flying again.

"It's a blizzard again," said Don Mooers, a lawyer and former congressional candidate, who has repeatedly complained to county and state officials about the site.

EIFS-EXTERIOR INSULATION FINISHING SYSTEM

- Developed after WWII.
- Transferred to U.S. in 1969 - Oil Crisis.
- Insulation Board – EPS secured to exterior wall.
- Base Coat - Applied with a trowel and embedded mesh.
- Finish Coat – Top of base coat – Gives crack-resistant “stucco-like” appearance.

Sectional View Of A Typical EIFS Application

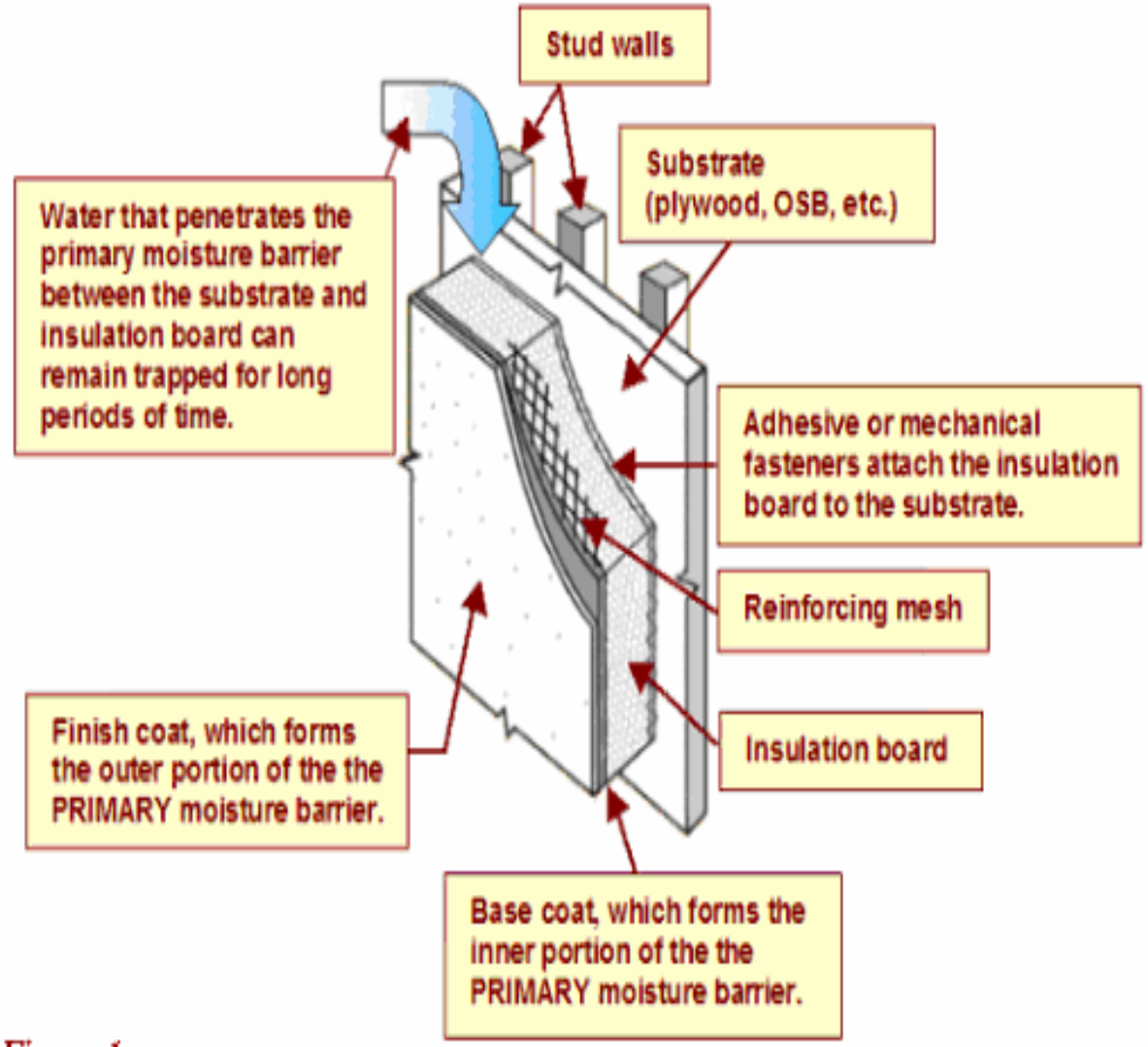


Figure 1

EIFS RASPING

Trowels – No Containment

EIFS IN STAGES

Rough surface to be rasped.

Fiberglass mesh used in reinforced base coat.

Panels

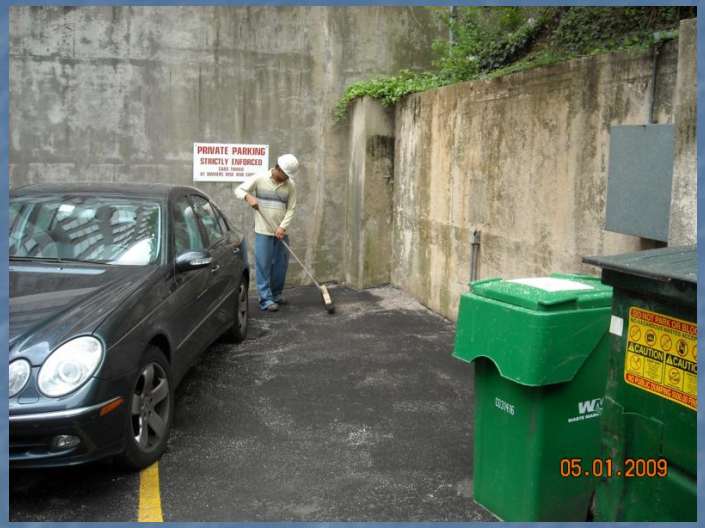
Base Coat Application

EIFS APPLICATION

Trowel used with vacuum

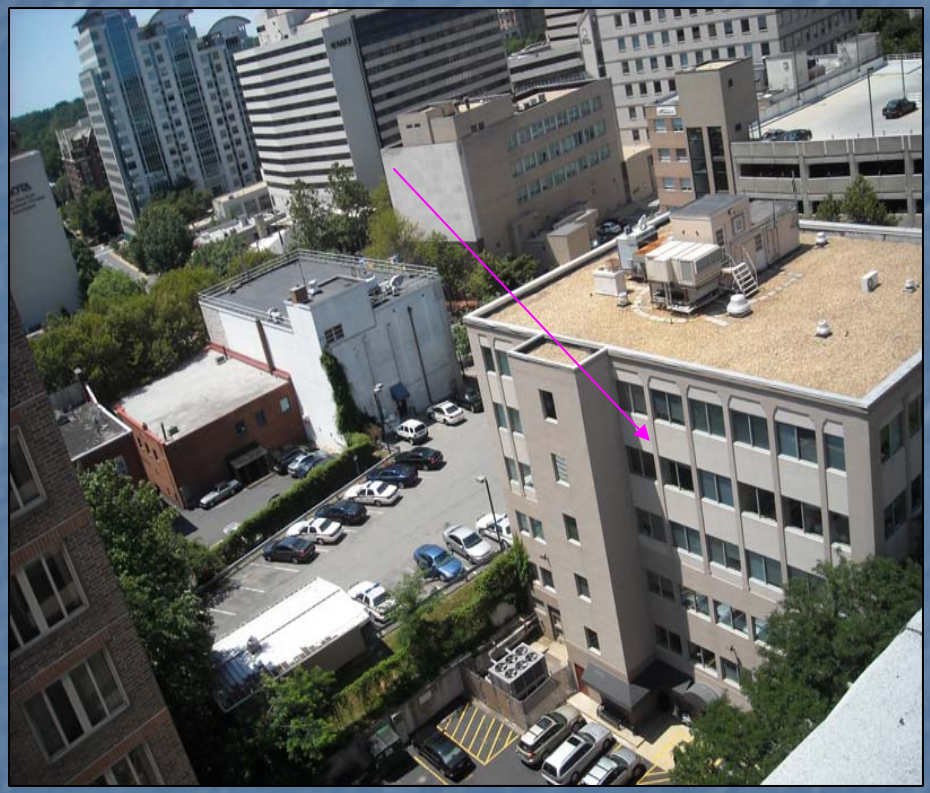
CONTAINMENT – FINALLY!

CLEANUP BEGINS



FINISHED EIFS BUILDING

OTHER EIFS BUILDINGS



EIFS BEST MANAGEMENT

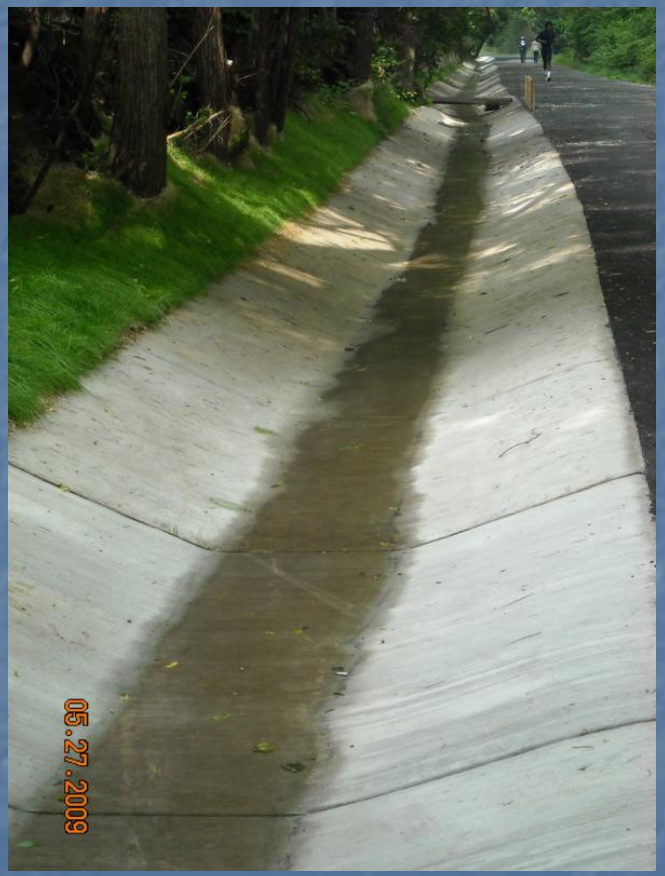
Main Street, Gaithersburg, MD

EIFS PROS & CONS

- Reasonable cost.
- High energy efficiency.
- Ease of application.
- Applied to all building types – retrofitting.
- Crack resistant, flame retardant.
- Pliable coatings.
- Seamless, modern look.
- Newer systems have concealed barriers to allow for moisture drainage.

- EFIS does not breathe.
- Entrapment of moisture where seams/seal fail.
- Limited drying potential on inside – mold.
- Few visual clues to detect leaks.
- Air dispersion of EPS.
- Not as resilient as brick, glass or pre-cast.
- Vast majority of EFIS systems have never been inspected.
- Lack of applicator training.

DONOHOE CONSTRUCTION NEIGHBORHOOD IMPROVEMENTS



Concrete Swale
Georgetown Branch Trail

Park Landscape Upgrades

CONCLUSION

- MAINTAIN GOOD COMMUNICATION WITH SUPERINTENDENT ON SITE.
- NOTIFY MAIN CONSTRUCTION OFFICE WITH RECOMMENDATIONS/VIOLATIONS.
- FREQUENT SITE VISITS.
- ENFORCEMENT ACTIONS.
- CHANGES IN PLAN REVIEW OR PERMIT PROCESS MAY BE NECESSARY.
- EPA TO ESTABLISH EFFLUENT LIMITATION GUDELINES FOR CONSTRUCTION SITE DISCHARGES.

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