## George Floyd: The Toxicology Report

Toxicology Report on George Floyd (prepared 5/31/2020 for the Hennepin County **Medical Examiner**)



Compound

Caffeine

Cotinine

4-ANPP

012 Yellow Vial

Fentanyl / Metabolite

Morphine - Free

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Report Issued 05/31/2020 18:44

Toxicology Report Patient ID Chain Age 46 Y Gender Workorder

Hennepin County Medical Examiner 530 Chicago Avenue Minneapolis, MN 55415 Positive Findings:

FLOYD, GEORGE Patient Name 2020-3700 NMSCP59310 DOB 10/14/1973 Male 20159963

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Matrix Source <u>Result</u> <u>Units</u> Positive 001 - Hospital Blood mcg/mL 001 - Hospital Blood Positive ng/mL 003 - Hospital Blood 0.65ng/mL 11-Hydroxy Delta-9 THC ng/mL 001 - Hospital Blood 1.2 Delta-9 Carboxy THC 001 - Hospital Blood 42 ng/mL 2.9 001 - Hospital Blood ng/mL 19 001 - Hospital Blood ng/mL 11 ng/mL 001 - Hospital Blood ng/mL 5.6 001 - Hospital Blood Presump Pos Presump Pos 012 - Urine ng/mL Presump Pos 012 - Urine ng/mL 012 - Urine ng/mL

Delta-9 THC Methamphetamine Fentanyl Norfentanyl Cannabinoids Amphetamines Fentanyl / Metabolite Morphine - Free See Detailed Findings section for additional information Testing Requested: Analysis Code Description

8050U Postmortem, Urine Screen Add-on (6-MAM Quantification only) 9096B Alcohol Screen, Blood (Forensic) 8210B Novel Psychoactive Substances (NPS) Screen 2, Blood 8052B Postmortem, Expanded, Blood (Forensic) 8756B Novel Psychoactive Substances (NPS) Screen 1, Blood Specimens Received: Miscellaneous

ID Tube/Container Collection Volume/ Matrix Source Mass Date/Time 2.8 mL 05/25/2020 21:00 001 Lavender Vial Hospital Blood 002 Gray Vial 05/25/2020 21:00 Hospital Blood 0.6 mL 003 Lavender Vial 5.75 mL 05/25/2020 21:00 Hospital Blood 004 Light Blue Vial Hospital Blood 2.5 mL 05/25/2020 21:00 005 Green Vial 1.3 mL 05/25/2020 21:00 Hospital Blood Hospital Serum or Plasma 006 Red Vial 0.75 mL 05/25/2020 21:00 007 Gray Top Tube 8.8 mL 05/26/2020 12:20 Femoral Blood 008 Gray Top Tube 8.8 mL 05/26/2020 12:20 Femoral Blood 009 Gray Top Tube 8.8 mL 05/26/2020 12:20 Femoral Blood

7.75 mL

Presump Pos

CONFIDENTIAL 20159963 Workorder NMSCP59310 Chain 2020-3700 Patient ID Page 2 of 7 Miscellaneous Tube/Container Volume/ Collection Matrix Source Date/Time Information Mass 05/26/2020 12:20 010 Gray Top Tube 8.8 mL Femoral Blood 011 Gray Vial 3.3 mL 05/26/2020 12:20 Femoral Blood

05/26/2020 12:20

Urine

05/26/2020 12:20 013 Yellow Vial 7.75 mL All sample volumes/weights are approximations. Specimens received on 05/28/2020. Detailed Findings: Rpt. Limit **Analysis and Comments** Result Specimen Source Units Analysis By Caffeine 0.20 001 - Hospital Blood LC/TOF-MS Positive mcg/mL 001 - Hospital Blood Cotinine LC/TOF-MS Positive 4-ANPP 0.65 003 - Hospital Blood LC-MS/MS ng/mL 0.10 LC-MS/MS 001 - Hospital Blood 11-Hydroxy Delta-9 THC 1.2 ng/mL 1.0 LC-MS/MS Delta-9 Carboxy THC 001 - Hospital Blood ng/mL 5.0 LC-MS/MS Delta-9 THC 2.9 ng/mL 0.50001 - Hospital Blood LC-MS/MS Methamphetamine 19 001 - Hospital Blood ng/mL 5.0 LC-MS/MS Fentanyl 11 0.10 001 - Hospital Blood 001 - Hospital Blood LC-MS/MS Norfentanyl ng/mL 0.20ng/mL 50 012 - Urine EΙΑ Cannabinoids Presump Pos This test is an unconfirmed screen. Confirmation by a more definitive technique such as GC/MS is recommended. 012 - Urine EΙΑ Amphetamines Presump Pos ng/mL This test is an unconfirmed screen. Confirmation by a more definitive technique such as GC/MS is recommended.

Other than the above findings, examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary. Reference Comments: 11-Hydroxy Delta-9 THC (Active Metabolite) - Hospital Blood:

11-Hydroxy Delta-9 THC is an active intermediate metabolite of tetrahydrocannabinol (THC) the active

ng/mL

This test is an unconfirmed screen. Confirmation by a more definitive technique such as GC/MS is recommended.

2.0

012 - Urine

012 - Urine

LC-MS/MS

component of marijuana. Usual peak levels: Less than 10% of THC levels after smoking. 4-ANPP (Despropionyl fentanyl) - Hospital Blood: 4-ANPP (despropionylfentanyl) is a precursor chemical used in the production of fentanyl and is also a fentanyl metabolite. It may be used in the production of other related compounds such as acetyl fentanyl, butyryl fentanyl and furanyl fentanyl and may be a metabolite of these and other fentanyl-related compounds. It is considered to be pharmacologically weak. Amphetamines - Urine: Amphetamines are a class of central nervous system stimulant drugs, with some therapeutic uses, and a high

related compounds. A second test is necessary to confirm the presence of amphetamine related compounds. NMS v.18.0

This result derives from a presumptive test, which may be subject to cross-reactivity with non-amphetamine

Reference Comments:

CONFIDENTIAL Workorder Chain Patient ID Page 3 of 7 Caffeine (No-Doz®) - Hospital Blood:

Caffeine is a xanthine-derived central nervous system stimulant. It also produces diuresis and cardiac and

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respiratory stimulation. It can be readily found in such items as coffee, tea, soft drinks and chocolate. As a reference, a typical cup of coffee or tea contains between 40 to 100 mg caffeine.

potential for abuse.

The reported qualitative result for this substance was based upon a single analysis only. If confirmation testing is required please contact the laboratory. Cannabinoids - Urine: Cannabinoids are chemical compounds derived from the plant Cannabis sativa (marijuana), including active components, chemical congeners and metabolites. Delta-9-Tetrahydrocannabinol (THC) is the principal active

This result derives from a presumptive test, which may be subject to cross-reactivity with non-cannabinoid related compounds. A second test is necessary to confirm the presence of cannabinoid related compounds. Cotinine (Nicotine Metabolite) - Hospital Blood: Cotinine is a metabolite of nicotine and may be encountered in the fluids and tissues of an individual as a result

of tobacco exposure. Anabasine is a natural product occurring in tobacco, but not in pharmaceutical nicotine and a separate test for anabasine in urine can be used to distinguish tobacco from pharmaceutical nicotine use. The reported qualitative result for this substance was based upon a single analysis only. If confirmation testing is required please contact the laboratory.

Delta-9 Carboxy THC (Inactive Metabolite) - Hospital Blood: Delta-9-THC is the principle psychoactive ingredient of marijuana/hashish. Delta-9-carboxy-THC (THCC) is the inactive metabolite of THC. The usual peak concentrations in serum for 1.75% or 3.55% THC marijuana cigarettes are 10 - 101 ng/mL attained 32 to 240 minutes after beginning smoking, with a slow decline thereafter. The ratio of whole blood concentration to plasma concentration is unknown for this analyte. THCC may be detected for up to one day or more in blood. Both delta-9-THC and THCC may be present substantially

longer in chronic users. THCC is usually not detectable after passive inhalation.

Delta-9 THC (Active Ingredient of Marijuana) - Hospital Blood: Marijuana is a DEA Schedule I hallucinogen. Pharmacologically, it has depressant and reality distorting effects. Collectively, the chemical compounds that comprise marijuana are known as Cannabinoids. Delta-9-THC is the principle psychoactive ingredient of marijuana/hashish. It rapidly leaves the blood, even during smoking, falling to below detectable levels within several hours. Delta-9-carboxy-THC (THCC) is the inactive metabolite of THC and may be detected for up to one day or more in blood. Both delta-9-THC and THCC may be present substantially longer in chronic users. THC concentrations in blood are usually about one-half of serum/plasma concentrations. Usual peak levels in serum for 1.75% or 3.55% THC marijuana cigarettes: 50 - 270 ng/mL at 6 to 9 minutes after beginning smoking, decreasing to less than 5 ng/mL by 2 hrs.

Fentanyl (Duragesic®; Sublimaze®) - Hospital Blood: Fentanyl is a DEA Schedule II synthetic morphine substitute anesthetic/analgesic. It is reported to be 80 to 200 times as potent as morphine and has a rapid onset of action as well as addictive properties. It is reported that patients lost consciousness at mean plasma levels of fentanyl of 34 ng/mL when infused with 75 mcg/Kg over a 15 min period; peak plasma levels averaged 50 ng/mL. After application of a fentanyl transdermal preparation (patch), serum fentanyl concentrations are reported to be in the following ranges within 24 hours: 25 mcg/hour patch: 0.3 - 1.2 ng/mL 50 mcg/hour patch: 0.6 - 1.8 ng/mL 75 mcg/hour patch: 1.1 - 2.6 ng/mL

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Reference Comments:

100 mcg/hour patch: 1.9 - 3.8 ng/mL

elimination half-life of 17 hours (range, 13 to 22 hours).

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Following removal of the patch, serum fentanyl concentrations are reported to decrease with a mean The mean peak plasma serum fentanyl concentration in adults given an 800 mcg oral transmucosal fentanyl preparation over 15 minutes is reported at 2.1 ng/mL (range, 1.4 - 3.0 ng/mL) at approximately 0.4 hours.

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Signs associated with fentanyl toxicity include severe respiratory depression, seizures, hypotension, coma and death. In fatalities from fentanyl, blood concentrations are variable and have been reported as low as 3 ng/mL. Substance(s) known to interfere with the identity and/or quantity of the reported result: 4-methylphenethyl acetyl fentanyl

Fentanyl / Metabolite - Urine: Fentanyl is a DEA Schedule II synthetic morphine substitute anesthetic/analgesic. It is reported to be 80 to 200 times as potent as morphine and has a rapid onset of action as well as addictive properties. This result derives from a presumptive test, which may be subject to cross-reactivity with non-fentanyl related compounds. A second test is necessary to confirm the presence of fentanyl related compounds. Methamphetamine - Hospital Blood: d-Methamphetamine is a DEA schedule II stimulant drug capable of causing hallucinations, aggressive

behavior and irrational reactions. Chemically, there are two forms (isomers) of methamphetamine: I- and dmethamphetamine. The I-isomer is used in non-prescription inhalers as a decongestant and has weak CNSstimulatory activity. The d-isomer has been used therapeutically as an anorexigenic agent in the treatment of obesity and has potent CNS-, cardiac- and circulatory-stimulatory activity. Amphetamine and norephedrine (phenylpropanolamine) are metabolites of methamphetamine. d-Methamphetamine is an abused substance

because of its stimulatory effects and is also addictive. A peak blood concentration of methamphetamine of 20 ng/mL was reported at 2.5 hr after an oral dosage of 12.5 mg. Blood levels of 200 - 600 ng/mL have been reported in methamphetamine abusers who exhibited violent and irrational behavior. High doses of methamphetamine can also elicit restlessness, confusion, hallucinations, circulatory collapse and convulsions.

\*In this case, the level of methamphetamine determined has not been differentiated according to its isomeric

forms. Differentiation of the isomers of methamphetamine is available upon request. 12. Morphine - Free (Codeine Metabolite) - Urine: Morphine is a DEA Schedule II narcotic analgesic. In analgesic therapy, it is usually encountered as the parent compound, however, it is also commonly found as the metabolite of codeine and heroin. In illicit preparations from which morphine may arise, codeine may be present as a contaminant. A large portion of the morphine is bound to the blood proteins or is conjugated; that which is not bound or conjugated is termed 'free morphine'.

Hydromorphone is a reported metabolite of morphine. In general, free morphine is the active biologic agent. Morphine has diverse effects that may include analgesia, drowsiness, nausea and respiratory depression. 6-monoacetylmorphine (6-MAM) is the 6-monoacetylated form of morphine, which is pharmacologically active. It is commonly found as the result of heroin use. Norfentanyl (Fentanyl Metabolite) - Hospital Blood:

Substance(s) known to interfere with the identity and/or quantity of the reported result: Benzyl Fentanyl

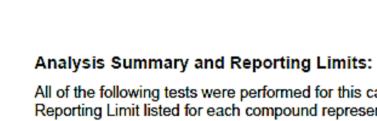
Physician/Pathologist Name: Dr. Andrew Baker Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded one (1) year from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

Norfentanyl is the primary inactive metabolite of the synthetic narcotic analgesic fentanyl.

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Workorder 20159963 was electronically

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Compound

Codeine - Free

Acryl Fentanyl

Compound

THF-F

U-47700

U-49900

U-51754

Compound

Valeryl Fentanyl

cis-3-Methylfentanyl

Isobutyrylfentanyl

Methoxyacetylfentanyl

Hydrocodone - Free

6-Monoacetylmorphine - Free

Dihydrocodeine / Hydrocodol - Free

Sample Comments:

Findings section of the report for those compounds that were identified as being present.

Rpt. Limit

5.0 ng/mL

25 ng/mL

25 ng/mL

25 ng/mL

Daniel S. Isenschmid, Ph.D., F-ABFT Forensic Toxicologist All of the following tests were performed for this case. For each test, the compounds listed were included in the scope. The Reporting Limit listed for each compound represents the lowest concentration of the compound that will be reported as being positive. If the compound is listed as None Detected, it is not present above the Reporting Limit. Please refer to the Positive

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 -Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for: Rpt. Limit Compound Hydromorphone - Free 5.0 ng/mL Morphine - Free 25 ng/mL 25 ng/mL Oxycodone - Free

Oxymorphone - Free

Cyclopropylfentanyl

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meta-Methylmethoxyacetylfentanyl

Workorder

Compound

Compound

Opiates

Phencyclidine

ortho-Fluorofentanyl

para-Fluorofentanyl

trans-3-Methylfentanyl

Fentanyl / Metabolite

Methadone / Metabolite

Oxycodone / Oxymorphone

para-Fluorobutyrylfentanyl

para-Fluoroisobutyrylfentanyl

para-Methylmethoxyacetylfentanyl

Compound

5.0 ng/mL

Rpt. Limit

0.050 ng/mL

Rpt. Limit

0.050 ng/mL

Rpt. Limit

2.0 ng/mL

300 ng/mL

300 ng/mL

100 ng/mL

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Rpt. Limit

5.0 ng/mL

10 ng/mL

2.0 ng/mL

5.0 ng/mL

0.50 ng/mL

10 ng/mL

10 ng/mL

10 ng/mL

2.0 ng/mL

10 ng/mL

10 ng/mL

5.0 ng/mL

10 ng/mL

Rpt. Limit

5.0 mg/dL

5.0 mg/dL

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25 ng/mL

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signed on 05/31/2020 18:27 by:

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Acode 52198B - Cannabinoids Confirmation, Blood - Hospital Blood -Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for: Compound Rpt. Limit 11-Hydroxy Delta-9 THC 1.0 ng/mL

Acode 50016U - Opiates - Free (Unconjugated) Confirmation, Urine

Delta-9 THC 0.50 ng/mL Delta-9 Carboxy THC 5.0 ng/mL Acode 52483B - Amphetamines Confirmation, Blood - Hospital Blood -Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for: Rpt. Limit Compound Rpt. Limit Compound Amphetamine 5.0 ng/mL Methamphetamine 5.0 ng/mL Ephedrine 5.0 ng/mL 5.0 ng/mL Norpseudoephedrine MDA 5.0 ng/mL Phentermine 5.0 ng/mL MDEA 5.0 ng/mL 20 ng/mL Phenylpropanolamine MDMA 5.0 ng/mL Pseudoephedrine 5.0 ng/mL Acode 52484B - Fentanyl and Acetyl Fentanyl Confirmation, Blood - Hospital Blood -Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for: Compound Rpt. Limit Compound Rpt. Limit Acetyl Fentanyl 0.10 ng/mL Norfentanyl 0.20 ng/mL 0.10 ng/mL Fentanyl Acode 52488B - Designer Opioids Confirmation (2019 Scope), Blood - Hospital Blood -Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for: Rpt. Limit Rpt. Limit Compound Compound 2-Furanylfentanyl 0.050 ng/mL Butyrylfentanyl 0.050 ng/mL 4-ANPP 0.10 ng/mL Carfentanil 0.050 ng/mL

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Rpt. Limit

0.050 ng/mL

Rpt. Limit

Acode 8050U - Postmortem, Urine Screen Add-on (6-MAM Quantification only)

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0.050 ng/mL

500 ng/mL Amphetamines Barbiturates 0.30 mcg/mL Benzodiazepines 50 ng/mL Cannabinoids 50 ng/mL Cocaine / Metabolites 150 ng/mL

-Analysis by Enzyme Immunoassay (EIA) for:

Steroidal Anti-Inflammatory Agents, Opiates and Opioids.

Acode 8210B - Novel Psychoactive Substances (NPS) Screen 2, Blood - Hospital Blood

Acode 8052B - Postmortem, Expanded, Blood (Forensic) - Hospital Blood -Analysis by Enzyme-Linked Immunosorbent Assay (ELISA) for: Rpt. Limit Rpt. Limit Compound Compound Gabapentin Barbiturates 0.040 mcg/mL 5.0 mcg/mL Salicylates Cannabinoids 10 ng/mL 120 mcg/mL -Analysis by High Performance Liquid Chromatography/Time of Flight-Mass Spectrometry (LC/TOF-MS) for: The following is a general list of compound classes included in this screen. The detection of any specific analyte is concentration-dependent. Note, not all known analytes in each specified compound class are included. Some specific analytes outside these classes are also included. For a detailed list of all analytes and reporting limits, please contact NMS Labs. Amphetamines, Anticonvulsants, Antidepressants, Antihistamines, Antipsychotic Agents, Benzodiazepines, CNS Stimulants, Cocaine and Metabolites, Hallucinogens, Hypnosedatives, Hypoglycemics, Muscle Relaxants, Non-

classes considered to be Novel Psychoactive Substances included in the Gas Chromatographic screen. The detection of any particular compound is concentration-dependent. Please note that not all known compounds included in each specified class or heading are included. Some specific compounds outside these classes are also included. For a detailed list of all compounds and reporting limits included in this screen, please contact NMS Labs. Substituted Phenethylamines, Opioid Analgesics, Substituted Cathinones, Pyrrolidinophenones, Piperazines, Tryptamines, Aminoindanes, and Benzofurans.

-Analysis by Gas Chromatography/Mass Spectrometry (GC/MS) for: The following is a general list of compound

Acode 8756B - Novel Psychoactive Substances (NPS) Screen 1, Blood - Hospital Blood -Analysis by High Performance Liquid Chromatography/Time of Flight-Mass Spectrometry (LC/TOF-MS) for: Rpt. Limit Rpt. Limit Compound Compound 25B-NBOMe 2-Furanylfentanyl 0.10 ng/mL 1.0 ng/mL

Analysis Summary and Reporting Limits: Compound 25C-NBOMe

25H-NBOMe

25I-NBOMe

3-MeO-PCP

4-MeO-PCP

Acetyl Fentanyl

Acryl Fentanyl

Bromazepam

Butyrylfentanyl

-Analysis by Headspace Gas Chromatography (GC) for.

Butylone

Compound

Acetone

Ethanol

Powered by UMKC School of Law

4-ANPP

BZP

1.0 ng/mL 1.0 ng/mL 1.0 ng/mL 3-Fluorophenmetrazine 5.0 ng/mL 5.0 ng/mL

Rpt. Limit

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Methoxetamine Methoxphenidine Methoxyacetylfentanyl Methylone Mitragynine N-Ethyl Pentylone

Compound

Isopropanol

Methanol

Compound

Meclonazepam

Mephedrone

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0.10 ng/mL 5.0 ng/mL 0.50 ng/mL 0.10 ng/mL Pentedrone 10 ng/mL Pentylone 10 ng/mL Phenazepam 10 ng/mL Pyrazolam TFMPP 0.10 ng/mL 0.10 ng/mL THF-F 50 ng/mL U-47700

Carfentanil 0.20 ng/mL Clephedrone 1.0 ng/mL Clonazolam U-49900 5.0 ng/mL 1.0 ng/mL Cyclopropylfentanyl 0.50 ng/mL U-51754 1.0 ng/mL Valeryl Fentanyl 5.0 ng/mL 0.50 ng/mL Delorazepam 2.0 ng/mL Deschloroetizolam alpha-PVP 2.0 ng/mL Dibutylone 10 ng/mL cis-3-Methylfentanyl 0.10 ng/mL 0.50 ng/mL Diclazepam 20 ng/mL meta-Methylmethoxyacetylfentanyl 0.10 ng/mL Ethylone 10 ng/mL ortho-Fluorofentanyl Etizolam 0.10 ng/mL 10 ng/mL para-Fluorobutyrylfentanyl para-Fluorofentanyl Flubromazepam 20 ng/mL 0.10 ng/mL Flubromazolam 5.0 ng/mL para-Fluoroisobutyrylfentanyl 0.10 ng/mL para-Methylmethoxyacetylfentanyl 0.10 ng/mL 0.50 ng/mL Isobutyrylfentanyl trans-3-Methylfentanyl 0.10 ng/mL MDPV 10 ng/mL **MPHP** 10 ng/mL Acode 9096B - Alcohol Screen, Blood (Forensic) - Hospital Blood

Rpt. Limit

5.0 mg/dL

10 mg/dL

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**OTHER RESOURCES** 

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Information

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 George Floyd Murder (Chauvin and Other MPD Officers) Trial: An Account Original MPD Statement on Floyd: "A

Medical Incident" Transcript of 911 Call Leading to Floyd's Arrest

Timeline of the Arrest of George Floyd

 Transcript of Floyd's Arrest (from police bodycam)

George Floyd: The Toxicology Report

 Autopsy Report for George Floyd Floyd Death Prompts Calls for Police

Reform What Caused Floyd's Death? (Q & A) Minneapolis Maps (Arrest / Damage Locations)

 Who Was George Floyd? (G. Keillor) Pre-Trial Developments in the George Floyd Case Chronology of the MPD (Floyd Murder)

• The Courtroom (Diagram) George Floyd Case: Charges Explained Charges Against Derek Chauvin (Revised) Complaint)

 Selected Previous Complaints Against Chauvin Who Is Judge Cahill?

• The Jury in the George Floyd Murder (Derek Chauvin) Trial Opening Arguments in the George Floyd

Murder (Chauvin)Trial Minnesota Demographics: Race, Education, & Poverty

 Racial Diversity and Racial Disparities in Minnesota The MPD (George Floyd Murder) Case: Links & Bibliography